AD-A148 200 AN ARCHEOLOGICAL OVERVIEW AND MANAGEMENT PLAN FOR THE TOBYHANNA ARMY DEPOT(U) ENVIROSPHERE CO NEW YORK C A HAY ET AL. SEP 84 CX-4000-3-0018 1/1

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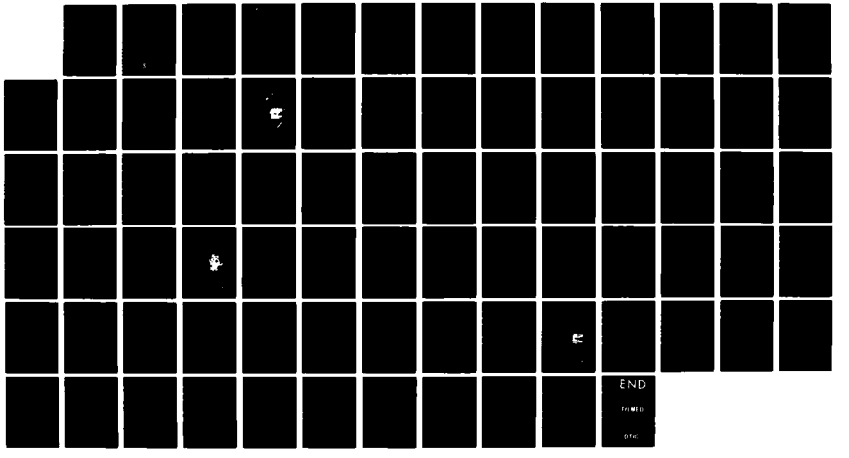

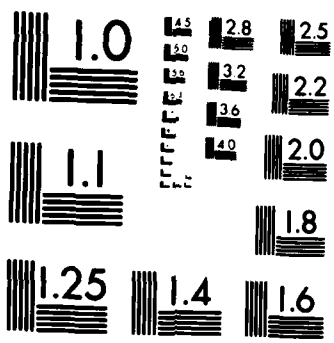

Final
Report No. 9
September 1984

An Archeological Overview and Management Plan for the Tobyhanna Army Depot

Under Contract CX4000-3-0018
with the

National Park Service
U.S. Department of the Interior
Philadelphia, Pennsylvania 19106

for the
U.S. Army Materiel Development and
Readiness Command

by

The Pennsylvania State University
University Park, Pennsylvania 16802

and

Envirosphere Company
2 World Trade Center
New York, New York 10048

Prepared under the Supervision of

Joel I. Klein, Principal Investigator
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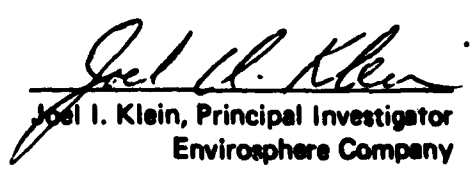

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16. Abstract (Limit: 200 words)

This archeological overview and management plan provides a tool which can be used by DARCOM and decision-makers at Tobyhanna Army Depot to assist in complying with regulations and procedures relating to historic preservation (Technical Manual 5-801-1, Technical Note No. 78-17, Resources Management 32 CFR 650.18-650.193, Army Regulation 420-40; 36 CFR 800). This document summarizes data relating to the area's environmental history; cultural chronology; historic and modern ground disturbances; previous archeological surveys; presently identified archeological resources; known artifact ecofact, and/or documentary collections relating to archeological resources; potentially identifiable but not presently recorded archeological resources; significant archeological resources; locational data of known archeological resources; and locational data of potential archeological resources.

No significant archeological remains are recorded at the Tobyhanna Army Depot (TOAD). While extensive land disturbance has been defined for several areas at TOAD, two areas, the vicinity of Oakes Swamp and the Passion Recreation Area, are only minimally disturbed and may yield archeological resources. Remnants of the original Tobyhanna Military Reservation buildings may still exist in TOAD's GDA-1 and remnants of a structure associated within the Dodge, Meggs and Dodge Company may still exist in TOAD's GDA-6.

Recommendations for archeological survey include: undisturbed areas near marshland and streams to identify possible archeological resources and areas near future development projects to document inferred land disturbance. Informing personnel of DARCOM's historic preservation responsibilities is also recommended.

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PREPARERS AND QUALIFICATIONS

Conran A. Hay directed Pennsylvania State University's (PSU) data collection and analysis for the preparation of this overview. He is presently Research Associate at the PSU. He received his doctoral degree in Anthropology from PSU in 1978, and has directed numerous cultural resources surveys throughout Pennsylvania. Among Dr. Hay's numerous presented papers and publications dealing with Pennsylvania prehistory are "Predictive Models of Site Distribution within the Bald Eagle Creek Watershed" published in The Archaeology of Central Pennsylvania, and "Efficiency in Cultural Resource Management: the Role of Predictive Models" submitted to the Interagency Archeological Services division of NPS. Dr. Hay is a member of the Pennsylvania Archaeological Council and the Society for Pennsylvania Archaeology.

Sydne B. Marshall is Assistant Technical Manager for the DARCOM project, responsible for the day-to-day operation of the project. She is a contributing author of this archeological overview and management plan. She holds B.A., M.A., M Phil, and Ph.D. degrees in Anthropology. Over the past 12 years, Dr. Marshall has participated in the excavation, analysis, management, and reporting of many large and small archeological projects in northeastern North America including northeastern Pennsylvania. She is currently a Senior Engineer with Envirosphere Company.

Ira C. Beckerman participated in the data gathering and report preparation stages of this overview. He received his M.A. degree in Anthropology in 1978 from the PSU where he is working toward his Ph.D. degree also in Anthropology. He has worked on numerous archeological projects in Pennsylvania, Tennessee, and Mexico and is the author of several published and presented papers.

Christopher E. Hamilton also participated in the data collection and report preparation stages for this overview. He received an M.A. in Anthropology from the Florida State University in 1977 and is working toward a Ph.D. in Anthropology at the PSU. Hamilton's experience includes on-land excavation in Pennsylvania, cultural resources interpretation and protection in Arizona and Florida, and underwater archeological survey in the Caribbean. Hamilton has written numerous cultural resource management reports.

Joel I. Klein is Project Manager for the DARCOM project. He is a contributing author of this archeological overview and management plan. He holds a B.S. in Anthropology and Physics and M.A. and Ph.D. degrees in Anthropology, and is certified by the Society of Professional Archeologists in field research and cultural resource management. His 15 years of professional experience have been in anthropological and archeological research, and cultural resource management. He has participated in archeological investigations across the United States. He is presently a Principal Engineer with Envirosphere Company.

ACKNOWLEDGEMENTS

This archeological overview and management plan could not have been written without the cooperation of Dr. Mary Daly, Chief of the Environmental and Energy Control Branch, and Abe Gonzalez, Master Planner, Tobyhanna Army Depot, who generously gave their time during site visits and provided essential data relating to the history of the installation's development.

Sandra Hay edited an early version of this overview draft.

Stephanie Rodeffer, National Park Service, provided guidance throughout the course of this project.

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1.1 PURPOSE AND NEED

This archeological overview and management plan will assist the U.S. Army Materiel Development and Readiness Command (DARCOM) in its efforts to comply with laws and regulations concerning the management of archeological resources at the Tobyhanna Army Depot (TOAD).

The National Historic Preservation Act of 1966 as amended (94 Stat. 2988) affirmed the policy of the federal government (Sec. 2(3)) to "administer federally owned, administered or controlled prehistoric and historic resources in a spirit of stewardship for the inspiration and benefit of present and future generations." Section 110(a)(1) of that code specifies that each federal agency is responsible for the preservation of such resources on agency-owned or controlled lands. DARCOM is committed to the implementation of that policy, following the guidelines for historic resource management set forth in the 1966 Act and related laws, regulations, and technical guidance.

DARCOM has contracted with the U.S. Department of the Interior's National Park Service to provide technical guidance for the development of DARCOM installation cultural resource overviews and management plans. The program is entitled the DARCOM Historical/Archeological Survey (DHAS). The National Park Service has in turn separated this review and planning program into two major elements, architectural and archeological. The architectural review and planning function is being directed by the Service's Historic American Buildings Survey (HABS), while the archeological resource assessment and planning function is being handled through the Service's Interagency Resource Management Division (IRMD). The archeological function includes both prehistoric and historical archeology.

Under the requirements of the National Historic Preservation Act (NHPA) of 1966 as amended (80 Stat. 915, 94 Stat. 2987; 16 USC 470), DARCOM must:

- inventory, evaluate, and where appropriate nominate to the National Register of Historic Places all archeological properties under agency ownership or control (Sec. 110(a)(2))
- prior to the approval of any ground-disturbing undertaking, take into account the project's effect on any National Register - listed or eligible property; afford the Advisory Council on

Historic Preservation a reasonable opportunity to comment on the proposed project (Sec. 106)

- complete an appropriate data recovery program on an eligible or listed National Register archeological site prior to its being heavily damaged or destroyed (Sec. 110(b), as reported by the House Committee on Interior and Insular Affairs [96th Congress, 2d Session, House Report No. 96-1457, p. 36-37])

Since the passage of the National Historic Preservation Act Amendments of 1980, DARCOM has begun a more active commmandwide program in historic resource management. DARCOM's management program involves several steps. The first step is a literature review and preliminary evaluation of known cultural resources on DARCOM facilities. This provides a basis for prediction of the overall resource base requiring management. The second step involves applying the understood parameters of the resource base in a plan which takes into consideration both short- and long-term command activities and goals.

Other compliance regulations taken into consideration by this archeological overview and management plan include:

- o The Archeological and Historic Preservation Act of 1974 (88 Stat. 174, 16 USC 469), which requires that notice of an agency project that will destroy a significant archeological site be provided to the Secretary of the Interior; either the Secretary or the notifying agent may support survey or data recovery programs to preserve the resource's information values.

- o The Archeological Resources Protection Act of 1979 (93 Stat. 721, 16 USC 470aa; this supersedes the Antiquities Act of 1906 [93 Stat. 225, 16 USC 431-43]), with provisions that effectively mean that

  - The Secretary of the Army may issue excavation permits for archeological resources on DARCOM lands (Sec. 4)

  - Anyone damaging an archeological resource on DARCOM lands may incur criminal (Sec. 6) or civil penalties (Sec. 7)

- o 36 CFR 800, "Protection of Historic and Cultural Properties" (44 FR 6068, as amended in May 1982); these regulations from the Advisory Council on Historic Preservation set forth procedures for compliance with Section 106 of the National Historic Preservation Act

- o Regulations from the Department of the Interior setting forth procedures for determining site eligibility for the National Register of Historic Places (36 CFR 60, 36 CFR 63), procedures implementing the Archeological Resources Protection Act (43 CFR 7) (also published as Department of Defense regulation 32 CFR 229), and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 FR 44716).

- o Guidance from the U.S. Department of the Army as to procedures and standards for the preservation of historic properties (32 CFR 650.181-650.193; Technical Manual 5-801-1; Technical Note 78-17; Army Regulation 420-40.), Army Regulation 200-1; Army Regulation 200-2.

The formulation of archeological plans for DARCOM installations is part of a developing national acceptance of the Resource Protection Planning Process (RP3) (HCRS 1980). RP3 presents an outline for the development of preservation plans, which, in turn, provide an analytical structure for preservation decision-making. This archeological overview and management plan has been prepared with those guidelines in mind.

This report is based on data made available by installation representatives as of April 1984.

1.2 THE TOBYHANNA ARMY DEPOT

The Tobyhanna Army Depot (TOAD) (Figures 1-1 and 1-2) is located on a mountainous 1293 a. tract of land, approximately two miles northwest of the village of Tobyhanna, in Coolbaugh Township, Monroe County, Pennsylvania. TOAD performs several missions for the Army. It maintains communication electronics systems for the Army and other Department of Defence agencies, including overhaul, fabrication, conversion, inspection, and testing, and receives, stores, and ships approximately 30,000 short tons of supplies annually. In addition to administering these missions, TOAD is also involved in mobilization, emergency planning, and Reserve Forces Training.

The Depot is physically divided into four areas: A) a 16 a. tract east of Pennsylvania Route 423, on which Wherry Housing is located; B) 257 a. west of Route 423 and east of the Depot area, on which troop facility buildings, a tent area, and a recreational lake are located; C) 368 a. between Midway Road and Perimeter Road, on which the maintenance shops (635,000 sq. ft.), storage buildings (2,047,000 sq. ft.), and Post Headquarters of the main portion of the Depot are located; and D) 654 a. in the northern portion of the facility, now heavily forested, which contain a 600,000 gallon water reservoir and a small rifle range.

1.3 SUMMARY OF PREVIOUS ARCHEOLOGICAL WORK CONDUCTED ON THE TOBYHANNA ARMY DEPOT

No systematic archeological surveys have been conducted at the site of the Tobyhanna Army Depot. No archeological sites are recorded in the State Site Files in Harrisburg for the Tobyhanna USGS 7-1/2 minute Quadrangle Map, although there are sites reported by artifact collectors for the Thornhurst and Blakeslee USGS 7-1/2 minute Quadrangle Maps to the west and southwest of Tobyhanna and for the Mount Pocono USGS 7-1/2 minute Quadrangle Map to the southeast of Tobyhanna (Hatch and Hamilton 1978; Hay 1979).

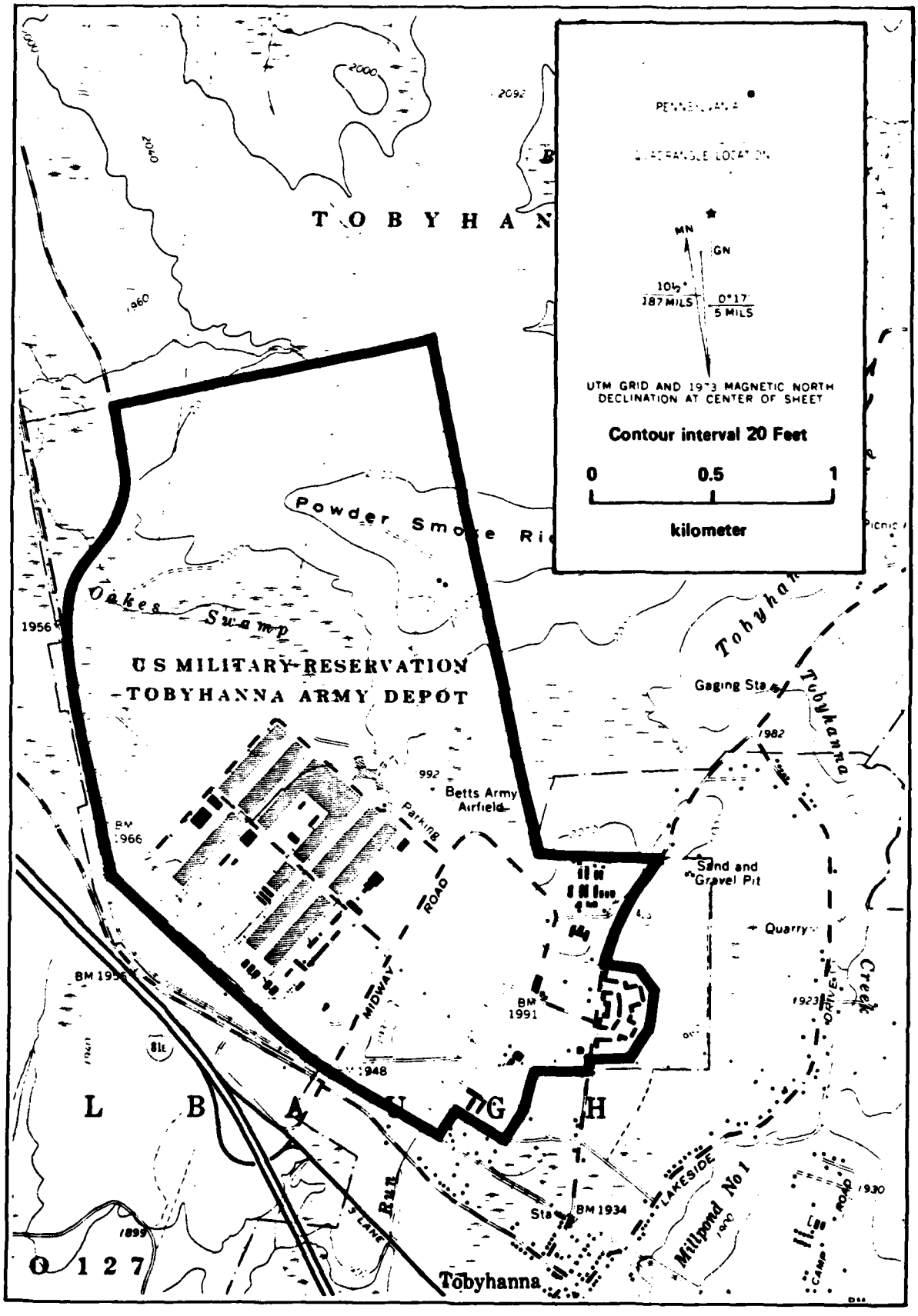

Figure 1-1. MAP OF THE GENERAL VICINITY OF TOBYHANNA ARMY DEPOT

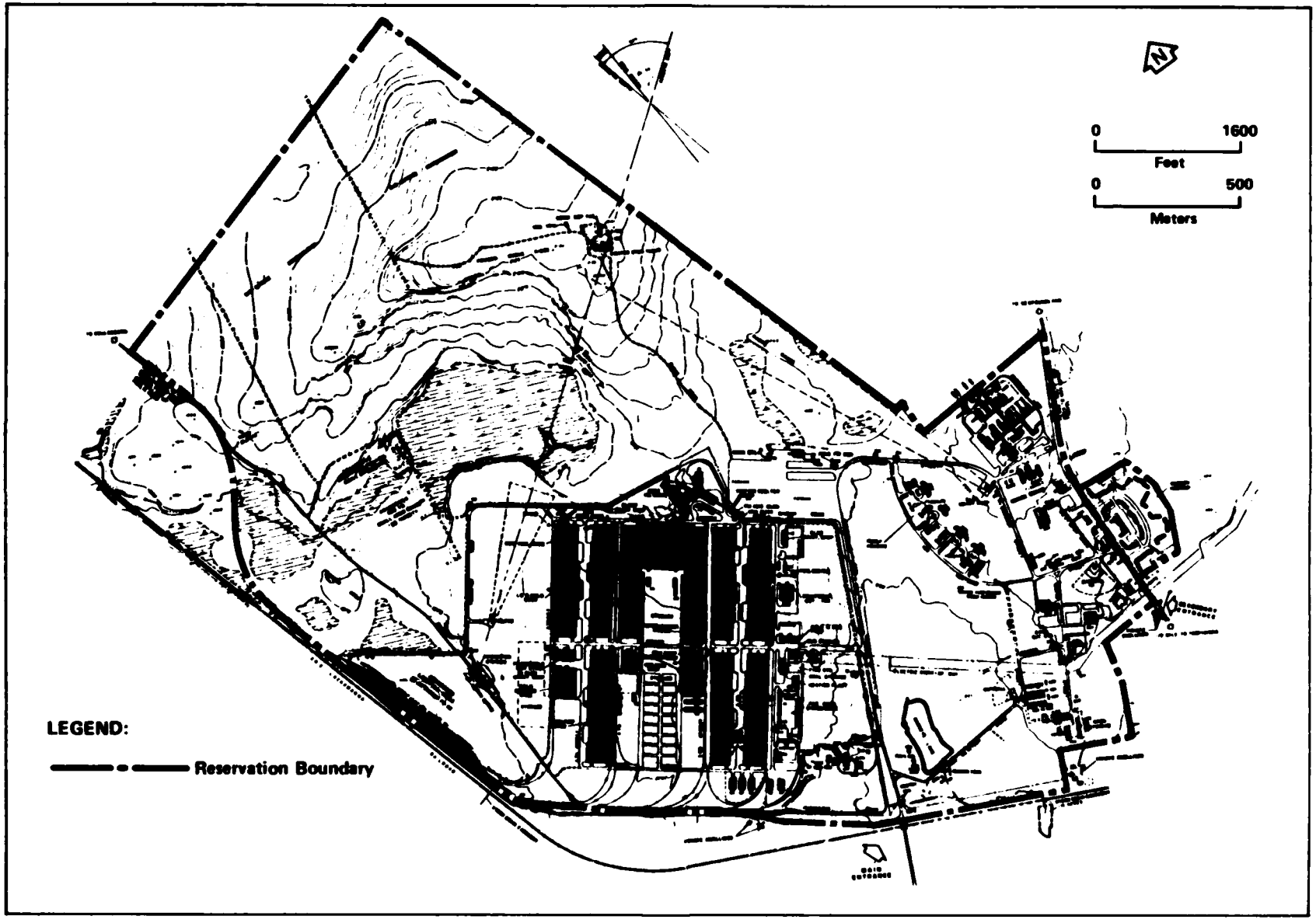

Figure 1-2. MASTER BASE MAP OF THE TOBYHANNA ARMY DEPOT

1.4 THE SOCIOCULTURAL CONTEXT OF THE ARCHEOLOGICAL RESOURCES ON THE TOBYHANNA ARMY DEPOT

Native Americans who may have utilized the Pocono region during the seventeenth and eighteenth centuries include the Susquehannocks and the Munsey Delaware. There are no known descendants of the Susquehannocks. Living descendants of the Munsey Delaware, numbering several thousand, are scattered through Oklahoma, Wisconsin and Ontario, Canada (Weslager 1972).

Today, Monroe County has a population of 69,409 and has generally maintained steady population growth. Coolbaugh Township has a population of 3993, but has experienced rather drastic population fluctuations, most recently, a dramatic increase (146 percent). Population densities for Monroe County and Coolbaugh Township are 114 per square mile and 47 per square mile, respectively. These figures compare with a State average of 264 people per square mile.

The economy of Monroe County appears to be generally strong. In 1980 it exhibited poverty and unemployment figures of 8.5 percent and 7 percent, respectively. These figures compared favorably with State averages of 10 percent and 7.4 percent. The economy of Coolbaugh Township exhibited poverty and unemployment levels of 12.3 percent and 6.5 percent, respectively (U.S. Bureau of the Census 1982).

Although Monroe County is basically rural, its economy is predominantly tourist rather than agricultural. Approximately 76 percent of the county is in forest with the natural beauty of the area being exploited for the resort and tourist trade. It currently ranks third of Pennsylvania counties for the number of dollars and jobs generated by travel. Both winter and summer vacations are offered in Pocono resorts (Robbins 1938:8).

Educational levels for Monroe County and Coolbaugh Township are at or above the Pennsylvania averages. Coolbaugh Township exhibits a population with 74 percent high school graduates above age 25. The Pennsylvania and Monroe County levels are 67.8 percent and 64.6 percent, respectively (Pennsylvania Municipalities 1982:4, 6, 14).

Ethnically, the Monroe County and Coolbaugh Township are basically Western European in origin. Old World countries such as France, Holland, England, and Germany provided the majority of initial immigrants. Currently, about seven percent of the population of Monroe County is classified as 'Black' or 'Other' (U.S. Bureau of the Census 1982).

The relationship of the current population to those that originally settled in the area is not entirely clear. Considering the heavily vacillating population levels of the past, it is likely that some population replacement has occurred. Although these population changes may have had an effect on local interest in historical affairs, the general ability of people to generate interest in the history and prehistory of the area in which they live should insure support for historic preservation efforts.

2.0
AN OVERVIEW OF THE CULTURAL AND RELEVANT NATURAL HISTORY OF THE TOBYHANNA ARMY DEPOT

2.1 THE PHYSICAL ENVIRONMENT

2.1.1 Earth Resources

The TOAD is located in the Glaciated Allegheny Plateau Section of the Appalachian Plateau Province (Fenneman 1938). Within this section is the Pocono Plateau, an uneven surface capped by strong Pocono sandstones of the Devonian Catskill Formation. North of Powder Smoke Ridge, the installation is underlain by the Duncannon Member of this Formation, while the remainder is underlain by the Poplar Gap Member. Although both members are thick resistant sandstones, the surficial geology and topography is controlled by one of several Wisconsin-age glacial till deposits, including unstratified till of the Gouldsboro End Moraine, and the Woodfordian Stone Ground Moraine (Tobyhanna Army Depot 1982a). Boulder Field Colluvium and Holocene-age peat deposits cover approximately 15 percent of the installation.

The soils on the installation include the Oquaga, Lackawanna, and Wellsboro series, derived from glacial till. Mapped phases share the common characteristics of moderately steep slope (8-25 percent), extreme stoniness (15-40 percent coarse fragments), very strong to strongly acid pH, a fragipan from 18 to 36 inches below the surface, and an immature horizonation (Inceptisol) (USDA 1981). In general, these soils are poorly suited or unsuited for aboriginal methods of horticulture. The central part of the Depot is listed as Cut and Fill land phase (USDA 1981).

2.1.2 Water Resources

Four watersheds accept drainage from the TOAD: Hunter Run and Cross Keys Run to the south and west; Tobyhanna Creek to the east and southeast; and an unnamed creek to the north (Tobyhanna Army Depot 1982a). These watersheds ultimately drain into the Lehigh River which empties into the Delaware River at Easton. Barney's Lake (man-made) is the only lake on the installation, and is located in its southeastern portion. Swamp and swampy land are found in the north central and western portions of the installation. Within the Pocono Plateau generally, gravel lenses in glacial till provide water of adequate yield and good quality (USDA 1981). In addition, artesian aquifers in both glacial and bedrock deposits are common.

2.1.3 Modern Climate

Tobyhanna has a mean annual high temperature of 55.6°F and a mean annual low temperature of 35.3°F (USDA 1981). The average high and low temperatures for July are 78.6°F and 56.2°F respectively. In January, the high and low temperature means are 31.2°F and 14.5°F respectively. Annual precipitation is 49.34 in., which falls equally from March through December 3 (9 - 5.2 in. per month) and slightly less in January and February. The average seasional snowfall is 50-60 in. per year. A growing season of 136 days can be expected, with a killing frost (28°F) occurring after April 28 and before October 10, five out of ten years. The average noon humidity is 60 percent during the winter months and 50 percent during the summer months. Prevailing winds are from the southwest during both winter and summer.

2.1.4 Plant Resources

The Tobyhanna Army Depot lies within the Allegheny Section of the Northern Appalachian Highlands Division of the Hemlock-White Pine-Northern Hardwoods Region (Braun 1974). As the name implies, this region originally had hemlock and white pine, mixed with a variety of northern hardwood species in the forest canopy. Local topographic and edaphic conditions controlled the particular mix of hardwoods, and to some extent, the relative importance of hemlock and white pine. The installation area can be divided into three forest habitats: dry, south-facing slopes; mesic, north-facing slopes; and swampy, low ground. The steep, south-facing slopes of Powder Smoke Ridge would most likely have contained a scrubby forest of hemlock, white pine, chestnut, red oak, white oak, sugar maple and yellow birch. Shrub and herb layers would have been poorly developed, as in the overall forest region, but Viburnum could be expected to grow in the shrub zone as well as shining club moss, shield fern, Oxalis, Maianthemum, Viola, and aster in the herb zone. On the more mesic north slopes of Powder Smoke Ridge, hemlock and beech would have been more prominent in the canopy, with white pine, red maple, sweet bitch, tuliptree, and northern red oak as part of the canopy mix. Along bog margins, white pine, hemlock, red maple, and sourgum would have been found. Bog shrubs would have included Chamaedaphne, Labrador tea, Nemopanthus, Vaccinium, Viburnum, and possibly Rhododendron and mountain laurel.

Native American inhabitants of the region would most likely have found this location marginal for gathered plant foods. In particular, nut production was low compared to other areas.

2.1.5 Animal Resources

Prior to modern land development, the area surrounding the TOAD would have supported a wetlands-oriented animal population, including some deer, turkey, and bear. Muskrat, beaver, rabbit, marten, raccoon, and waterfowl would have been the most available game animals for prehistoric inhabitants. Freshwater fish such as drum, darters, and catfish could have been found in nearby lakes, and eels, turtles, and amphibians may have provided food resources in swampy areas. On the

basis of woodland productivity estimates, the installation area probably provided a poor to fair animal habitat (USDA 1981).

2.1.6 Paleoenvironment

During the last 15,000 years, the Pocono area has undergone radical changes in environment. The area was glaciated during the Wisconsin glacial episode and remained so until approximately 14,000 B.P. With the melting of the Wisconsin Glacier, a white spruce community which included green alder, poplar, and ground juniper as associated species colonized the newly exposed land surface (Watts 1979). By 12,760 BP, a spruce park vegetation had been established immediately south of the area (Crowel and Stuckenrath 1977). This community reflected a cool, moist climate. The subsequent vegetation of the area was characterized by a succession of colonizing species which migrated from more favorable environments further south. By 12,000 B.P., tag alder and Diploxylon pines (probably jack pine) were present. White pine, tamarack, and paper birch were present by 11,500 B.P., reflecting a climate that was warmer and moister than the glacial climate, but cooler than that of today. Macrofossil evidence from the Shawnee-Minisink site suggests the presence of hawthorn at that time (McNett, McMillan, and Marshall 1977). Shortly after 10,000 B.P., paper birch disappeared, white pine decreased and white birch appeared. Hemlock was present by 9600 B.P., and pitch pine by 9000 B.P. These changes produced an early Holocene forest similar to the modern Hemlock-White Pine-Northern Hardwoods Forest of New York.

Subsequent to 9000 B.P., the regional climate became warmer and drier, culminating in the Hypsithermal interval of 8000-5500 B.P. At Tobyhanna, this sequence may have started approximately 1000 years later (Sirkin 1977). Chestnut, one of the last species to migrate into the area, arrived shortly thereafter. After 5100 B.P., white and pitch pine again began to increase in importance, signifying a return to a cooler, wetter climate (Sirkin 1977). Hemlock ceased to be an important part of the forest at 4600 B.P., probably due to disease, but re-emerged approximately 3000 years later (Watts 1979). Since 2200 B.P., the climate and climax forest composition has remained essentially unchanged, with one exception. The chestnut blight early in this century resulted in the total loss of this species in the canopy.

A summary of the environmental history of the TOAD vicinity is presented in Table 2-1.

2.2 THE CULTURAL ENVIRONMENT

An outline of the cultural chronology of the TOAD area is presented in Table 2-2.

2.2.1 Prehistory

Archeologists disagree about the starting date of man's occupation of North America. Some argue for an early entry in the New World approximately 25,000-40,000 years ago, while others maintain that the earliest irrefutable evidence dates man's entry into this continent to

Table 2-1. A SUMMARY OF THE ENVIRONMENTAL HISTORY OF THE AREA OF THE TOBYHANNA ARMY DEPOT

Watts 1979
(Tannersville Bog
Long Swamp
Crider's Pond
Panther Run
Szabo Pond
Helmetta Bog)
Pollen

Date	Inferred Climate
2200 B.P. - Present	Essentially modern
5100 - 2200 B.P.	Cooler, moister climate; increase in white and pitch pine
7000 - 5100 B.P.	Warmer, dryer climate; chestnut colonizes area
10,000 - 7000 B.P.	Cooler, moister climate; hemlock - white pine northern hardwoods forest established
12,000 - 10,000 B.P.	Cooler, moister climate; fir, tag elder, jackpine, white pine, tamarack, paper birch dominate
14,000 - 12,000 B.P.	Cooler moister climate; white spruce, green older, poplar and grand juniper dominate
- 14,000 B.P	Glacial

Table 2-2. A SUMMARY OF THE CULTURAL CHRONOLOGY OF THE AREA OF THE TOBYHANNA ARMY DEPOT

Cultural Unit					
Tradition	Period or Phase	Date	General Settlement Patterns	General Subsistence Systems	Kinds of Archeological Remains Representative of Period
American	Resort	AD 1910 to Present	Small cities and towns with numerous small villages. Few farmsteads and isolated dwellings all well connected by many small and some large roadways. Mail road network for bulk products and airports for passenger and parcel delivery. Specialized facilities for recreation, manufacturing and military use.	Some truck farming as well as some small farmsteads. Economy based on service industries associated with Resort areas for transient populations. Some light manufacturing.	Recreational facilities with multiple single family or couple dwellings. Plastics, glass, steel, aluminum objects. Many consumer items. Many electrically powered devices. Numerous water, power, and sewage systems. Asphalt roadways. Rail and air facilities. Numerous automobiles and parts. Highly standardized products.
	Forest	AD 1800 to 1910	Few farmsteads with towns and small villages at road intersections. Settlements often associated with sawmills, tanneries and mill ponds for water driven machinery. Temporary lumber camps and small hunting and fishing stations. Improved roads and railways for movement of timber and leather goods.	Rural economy fully mechanized based on forest products. Subsistence farming augmented by imported supplies. Railroad associated activities. Ice farming and resort trade in latter part of phase.	Lumber and tanning mill facilities near artificial mill ponds. Frame, stone and brick housing. Artifacts such as vats, saws, and belt driven machine parts from associated industries. Iron, glass, and ceramic items. Developed road and railroad network.
	Pioneer	AD 1650 to 1800	Widely spaced farmsteads in pockets of fertile soil in larger creek valleys. Very few roads connecting to outside areas. Small fortifications for defense of surrounding populations.	Subsistence farmers with external trade in necessities and some luxury items for farm and forest products.	Small log or stone structures. Items of domestic manufacture with some imported manufactures of iron, glass, or ceramics. Possible high ratio of individual weaponry.
Native American	Ethnohistoric	AD 1600 to 1770	Variety of separate tribes relocated to communities and hamlets in the area. Moravian organized villages. Seasonal movement of subgroups for wild food resources.	Swidden agriculture, relying on corn, beans, squash. Deer and other game supplementing diet. Fur trade and cash economy dominates late period.	Traditional native artifact forms made with imported raw materials; wampum beads, European trade goods, such as glass beads, copper kettles, bottles, rings, iron tools.

Table 2-2. A SUMMARY OF THE CULTURAL CHRONOLOGY OF THE AREA OF THE TOBYHANNA ARMY DEPOT (Continued)

Cultural Unit					
Tradition	Period or Phase	Date	General Settlement Patterns	General Subsistence Systems	Kinds of Archeological Remains Representative of Period
	Late Woodland	AD 1000 to 1600	Large agricultural villages, some palisaded, on alluvial expanses. Seasonal hunting and gathering camps. Warfare present, high population density.	Corn swidden agriculture, with fishing hunting, some gathering. Acorns used in years of crop failure.	Madison and Levanna Points, Owasco-like grit-tempered pottery, clay elbow pipes.
	Middle Woodland	AD 300 to 1000	Small villages, non-palisaded on high ground above marshes and on the sides of hills.	Incipient agriculture, encouraged wild foods, such as Chenopodium and Amaranth. Shellfish and fish used, with a wide range of gathered foodstuffs and game.	Rossville, Jack's Reef corner and side-notched points. Vinette and Brodhead Net-Marked pottery. Narrow sub-rectangular gorgets, prismatic flake knives, notched net sinkers, stone tubular net sinkers, stone tubular pipes, variety of ground stone implements.
	Early Woodland	1000 BC to AD 300	Small villages near and on floodplains, seasonal camps for gathered foods, hunting camps.	Broad spectrum hunting and gathering with Chenopodium and Amaranth used heavily. Fishing and shellfish gathering important.	Meadowood points, Vinette pottery, grit tempered, tubular pipes, bird-stones, native trade goods from Midwest: copper tools, slate gorgets, flint.
	Transitional	2200 to 1000 BC	Riverine orientation, numerous small, scattered sites along banks of major streams, in high parts of floodplains, and on islands in rivers.	Broad spectrum hunting and gathering with Chenopodium and Amaranth used. Net fishing important. Nut species important Fall resource, wide range of animals hunted.	Jasper Lehigh, Perkiomen points Argillite Koens-Crispin points, flint and chert Dry Brook and Orient points, steatite bowls, netsinkers.
	Late Archaic	3500 to 2200 BC	Base camp, with seasonal camps on either bottomland terraces or along lakes. Decreased annual mobility, central based foraging pattern.	Broad spectrum hunting and gathering with Chenopodium and Amaranth heavily used. Fishing important. Nut species are important Fall-Winter food. Wide range of animals hunted.	Lackawaxen, Egypt Mills points; bipitted mullers, chipped celts, winged spear throwers.
	Middle Archaic	5500 to 3500 BC	Restricted foraging pattern. Seasonal camps along rivers and uplands.	Emphasis on deer, turkey, bear, with small game also utilized. Gathered foods emphasized nuts, some grasses, berries, selective diet.	Brewerton, Vosburg, and Otter Creek points. Stone mortars, pestles, grooved axe.
	Early Archaic	8000 to 5500 BC	Small, mobile, seasonal base camps, sites commonly in lowlands.	Hunting of large game emphasized. Small game taken occasionally. Hickory and walnut important Fall food resources. Selective diet.	Bifurcate-base points, Palmer, Kirk points.

Table 2-2. A SUMMARY OF THE CULTURAL CHRONOLOGY OF THE AREA OF THE TOBYHANNA ARMY DEPOT (Continued)

Cultural Unit					
Tradition	Period or Phase	Date	General Settlement *Patterns*	General Subsistence Systems	Kinds of Archeological Remains Representative of Period
	Paleo-Indian	10,000 to 8000 BC	Small, highly mobile bands. Sites located on high ground overlooking large expanses.	Hunting of large and small game, Pleistocene megafauna, some use of gathered foods.	Fluted projectile points, small end scrapers, heavily utilized, highly curated flakes, raw material from outside local area in addition to local materials.

only 14,000 years ago. The earliest arguable evidence of man in the northeastern U.S. comes from the Meadowcroft Rockshelter in western Pennsnlvania. Located in the unglaciated portion of the Appalachian Plateau, the lowest levels of the occupation date to over 17,000 B.C. (Adovasio et al. 1978). The assemblage includes a lanceolate biface and a highly developed small blade industry reminiscent of the Arctic Small Tool Tradition of western Alaska. The blade industry is similar to that found at other Paleo-Indian sites in the northeast, such as the Shoop, Debert, and Williamson sites. Also in the lowest occupational levels at Meadowcroft were the remains of deer, wapiti, shells and chenopod seeds, suggesting that these species were important food resources.

Paleo-Indian (10,000-8000 BC). The Paleo-Indian Period is the first firmly identified archeological period in North America. The beginning of the Paleo-Indian Period coincides with the initial retreat of the Wisconsin Period continental glaciers. The period ends around the terminus of the Pleistocene geologic period. During this terminal phase of the Pleistocene, a tundra-like environment existed in northwestern Pennsylvania, and supported a wide variety of now-extinct megafauna, such as mastodon and giant ground sloth. Modern species were also present, including elk, deer, and reindeer. Paleo-Indian peoples are thought to have hunted these and other species, supplementing their diet with the scarce arctic flora available. Paleo-Indian peoples were probably organized into small, highly mobile groups that may have traveled hundreds of miles in an annual round. Camps were often located at the top of knolls, overlooking valley expanses. Dutchess Quarry Cave (10,500 BC) in New York State and the Bull Brook Site (10,000 BC) in Massachusetts are two examples of this kind of adaptation.

East of Tobyhanna, on the Delaware River, the Shawnee Minisink site may represent a second riverine-oriented type of adaptation focusing on both plant and fish resources (McNett, McMillan, and Marshall 1977). At this site, hawthorn pits and fishbone were found in Paleo-Indian contexts dating to 10,700 BP. Besides a classic Clovis fluted point and a large number of end scrapers, one anvilstone and five hammerstone/abraders were also recovered, as well as many utilized and non-utilized flakes. Most of the lithic material appears to have come from local black flint outcrops, but a few pieces of exotic material such as jasper, chert, and argillite were also recovered. A spruce parkland environment has been interpreted as the environmental setting during the Paleo-Indian occupation of this site (Dent 1983).

Characteristic artifacts of this period are lanceolate and fluted Clovis projectile points and well-made, steeply-sided end scrapers. The lithic materials used in the manufacture of these artifacts are generally of high quality, and often come from sources far removed from the sites where the artifacts were found.

Early Archaic (8000-5500 BC). The Archaic Period, beginning with the Early Archaic, was a period characterized by a warmer climate, more similar to that of today (Watts 1979). During the Early Archaic, small migratory bands hunted and gathered in the deciduous forest environment that had replaced the Pleistocene tundra. Annual movement probably

declined significantly as the more mobile game animals moved north or became extinct. Deer, bear, and turkey were now the preferred game animals, and plant foods, particularly acorns and other nuts, provided an important part of the diet (Kent et al. 1971; Ritchie 1969). Small corner-notched points are characteristic of the period. Examples include the Palmer and Kirk types. More crudely made endscrapers and sidescrapers replaced the earlier variety. Local chert and jasper sources provided the bulk of the raw material for lithic tools. These sites are generally found on level areas along streams.

Middle Archaic (5500-3500 BC). Middle Archaic peoples continued the Early Archaic shift toward reliance on the resources of the deciduous forest. Plant foods, especially acorns and hickory nuts, and deciduous forest animal species probably became increasingly important staples (Funk 1977). Lithic assemblages reflect this shift, exhibiting increases in numbers of projectile points, knives, and groundstone artifacts. Otter Creek points, markers for a proto-Laurentian complex, are present in small percentages in the Upper Delaware area (Kinsey 1972).

Aboriginal groups were organized into small bands, aggregating periodically to exchange mates or organize collective hunts (Wobst 1978). Sites are sometimes found in level areas along streams.

Late Archaic (3500-2200 BC). During the Late Archaic, a fundamental shift toward sedentism, horticulture, and more complex social organization began. Late Archaic sites are larger, probably representing year-round base camps. Social organization probably was that of the patrilocal band (Ritchie and Funk 1973). Population size on a regional level was larger. In the Delaware Valley, a Delaware Valley Archaic complex has been defined, as part of the Piedmont tradition (Kinsey 1972). The major diagnostic trait of this complex is the Lackawaxen Stemmed point, a long narrow-stemmed form, made from coarse-grained material, either shale, argillaceous shale, argillite, rhyolite, quartz, or quartzite. Adzes, chipped celts, winged spearthrower weights, and bipitted mullers are also associated with this complex. Base camps tend to be at level areas along streams while special purpose camps are found in a variety of areas.

Transitional (2200-1000 BC). With the Transitional Period, evidence for social stratification emerges. The distribution of steatite may represent one example of exchanged status items (Ford 1974). This time period is divided into an earlier Broadspear tradition (2200-1500 BC), reflected in jasper Lehigh and Perkiomen points and argillite Koens-Crispin points, and a later Fishtail tradition (1500-1000 BC), represented by Dry Brook and Orient points. Associated Broadspear traits are crescent-shaped scrapers, polished heavy adzes, bipennate spearthrower weights, and heavy, notched netsinkers. Steatite bowls, although present in this earlier tradition, are more common in the Fishtail tradition. Marcy Creek (steatite-tempered) pottery and early Vinette pottery are also found in the Fishtail tradition. A strong riverine orientation has been inferred from floodplain site locations and associated artifact complexes (Witthoft 1971).

Woodland (1000 BC-1600 AD). The Woodland Period in the northeast has been divided into a minimum of three phases, Early, Middle, and Late. During the Middle and Late Woodland phases, pottery was prevalent, large sedentary villages were the basic settlement type, and collected and horticulturally maintained vegetal foods, such as Chenopodium, Amaranthus, Helianthus, and Polygonum were important supplements to wild food resources. Early in the Late Woodland period, maize agriculture was introduced into northeastern Pennsylvania, and quickly became the dominant subsistence mode.

The Early Woodland Period in the Upper Delaware is reflected in the Meadowood and Middlesex phases. The Meadowood phase is represented primarily by the distinctive Meadowood projectile point type. Middlesex phase material is similar to the Adena complex of exotic trade goods, mound burials, and other characteristics of chiefdom level societies. The Middle Woodland Period follows the trajectory set by the shift to sedentism during the Early Woodland. Middle Woodland in the Upper Delaware is reflected in the Bushkill complex, of which the Rossville point is the major diagnostic artifact. Narrow subrectangular gorgets and prismatic flake knives are also found in this complex. Later, Kipp Island (700 A.D.), Fox Creek, and the terminal Hunter's Home Phases represent the last manifestations of the pre-agricultural Woodland (Ritchie 1969).

The introduction of maize agriculture during the Late Woodland into the northeast signaled several changes in social organization. Population size increased as productivity of the land was increased. Village sizes also increased, with some being palisaded. This has been interpreted as the result of increased warfare over critical resources such as prime agricultural land and/or hunting territories (Kinsey and Graybill 1971). Sites tend to be located on level areas along streams and near expanses of high quality agricultural soils.

2.2.2 Ethnohistory

The Pocono Plateau around Tobyhanna is only a few miles to the east of the divide between the Susquehanna and Delaware River watersheds. The lack of major streams, trails or even protected valleys probably resulted in use during historic times by seasonal hunting and gathering expeditions. In the early eighteenth century, the Plateau was occupied by the Minsi Delaware, who were under the control of the Six Nations (Weslager 1972). The Delaware had settled the area along the upper Delaware River, avoiding the expansion of both Dutch and English settlers lower in the Delaware Valley. However, the fraudulently executed Walking Purchase of 1838, supported by the Six Nations Council, resulted in the removal of the Delaware tribe to Shamokin (Sunbury) or the Wyoming Valley, beginning in 1742. Bitter over their betrayal by Six Nations' leaders, many Delaware allied themselves with French interests and during the French and Indian War raided English settlements along both the Susquehanna and Delaware River valleys. The Pocono Plateau apparently provided a refuge for raiding parties during this time (Anonymous 1880). After 1763, Delaware groups continued to seek both legal and military redress, which ended with their military defeat by Henry Bouquet. The

Treaty of Fort Stanwyx in 1768 effected the removal of all Native Americans to west of the Ohio River. Settlement patterns during the ethnohistoric period are believed to have remained largely the same as during the preceeding Woodland period.

2.2.3 History

Pioneer Phase (1650-1800). Euroamerican settlement in the region of what was to become Monroe County, Pennsylvania, is first recorded for 1650, when Dutch copper miners moved through the Delaware Water Gap at Stroudsburg and located opposite modern Shawnee. The settlement survived but remained small until about 1710, when Dutch and French Huguenot farmers arrived from the Hudson Valley. During the intervening period, England replaced Holland as the colonial power in the region and the proprietorship of the Commonwealth of Pennsylvania was given to William Penn by King Charles II (Rupp 1845:159-162; Skillman 1952:2). It wasn't until 1730 that the Philadelphia government took any notice of the area or the settlers in what was, at that time, the northern portion of Bucks County.

The first attempt to 'legally' purchase the land from the indigenous population occurred in 1737. The Walking Purchase was contracted between the Indian Chief Teedyuscung and Thomas Penn, son of William. The agreement stated the title to the land, "to be taken off a parallel of latitude from any point as far as the best of three men could walk in a day, between sunrise and sunset, from a certain chestnut tree at or near Bristol, in a northwest course" (*Beers* 1875:12). Of the three men only Edward Marshall completed the walk, ending at the headwaters of the creek which bears his name.

A dispute arose over Teedyuscung's right to make the contract, for the sale affected other nearby aboriginal groups. Eventually, dissension regarding the contract caused it to be abrogated by John Penn, Thomas Penn's replacement as proprietor of Pennsylvania. Nevertheless, the flow of settlers continued and set the scene for the final struggle for control of the area.

Warfare was the most important activity in the region between 1755 and 1781. The French and Indian War (1755-1763), the first Pennimite War (1769-1776), and the American Revolution (1776-1781), all had terrible impacts on the region with much loss of life and property. However, the fate of the Indians in eastern Pennsylvania and the surrounding area was sealed by the march of Major General George Sullivan in 1779. This expedition was designed to accomplish much the same task for the fledgling United States in its conflict with the American Indians as General Sherman's march to Savannah less than 100 years later did against the Confederacy. The expedition left from Easton, Pennsylvania, and passed through the Wyoming Valley to Elmira, New York, from where it returned. With orders from George Washington to break the back of the Iroquois Confederacy as a reprisal for their attacks on frontier settlements, the campaign was a resounding success (Cattell 1912:38-56).

Political boundaries within the region have changed since their initial definition. Descending from a line of ever-fragmenting township and county units, the current boundaries of Monroe County and its townships were not achieved until 1836 when Monroe County separated from Northampton County (Skillman 1952:12-13).

Forest Phase (1800-1910). Serious settlement in the Pocono Plateau region by Euroamericans began about 1800. However, Coolbaugh Township's first settler, J. P. Woodling, did not arrive until 1829. While subsistence farming was an important occupation, it was the lumbering opportunities and the associated tanning industries which drew settlers. Early roads such as the Drinker Turnpike were the first paths over which products moved. However, it was not until the advent of the railroads that large-scale lumbering operations began.

In 1853 the Delaware, Lackawanna, and Western Railroad first provided relatively inexpensive and efficient transportation between the Pocono Plateau and its Eastern Markets. By 1848 Tobyhanna, then known as Nagelsville, was established with its own post office, five sawmills, three clothes pin factories (one the largest in the U.S. at the time), a shoe peg factory, a planing mill, and a silk mill. The nearby town of Gouldsboro was also established with an economy based on a tanning factory built by Jay Gould, for whom the town is named (Mathews 1886:1276).

Resort Phase (1910-present). By the turn of the century the forests had largely been removed. The use of mill ponds as ice farms then became a more important component of the local economy. The cutting and stripping of ice in the winter for subsequent shipment to the metropolitan markets remained a thriving industry until artificial refrigeration became commercially available after World War II. During World War II, German and Italian prisoners quartered at Tobyhanna Military Reservation were used to cut ice for military use (Knepp 1956:32-33).

Throughout this period, the Poconos gradually developed as a center for vacationers. Coolbaugh Township, after a local low in population of just over 500 people in 1940, has participated in the growth of the Pocono Resorts.

History of the TOAD Property. The specific location of the TOAD does not appear from documentary sources to have been occupied prior to the purchase of the lands by the Federal Government in 1909. In an 1845 description of Coolbaugh Township most of the land was classed 'unseated'. In fact, the above description was used for Monroe County as well (Rupp 1845:147-173).

An 1875 map indicates that the land northwest of the town of Tobyhanna (the area now occupied by the TOAD), was owned by Leonard Teal, John Teal, John Hook, Dan Wheeler, and Rick Van Tillbury. However, the map shows only one unidentified structure located within the current TOAD property (Beers 1875:17, 21). It was located along the Drinker Turnpike, on or near the western edge of the Operational Area and was owned by the Dodge, Meggs, and Dodge Lumber Company.

In 1909, the United States Government purchased a 21,000 a. tract in Monroe County which was named Camp Summerall and was used in 1913 by the Army and National Guard for field artillery training. During World War I, Camp Summerall, renamed the Tobyhanna Military Reservation, was used as an ambulance and tank regiment training center. Idled after the war until 1932, the Tobyhanna Military Reservation became the site for a CCC camp, and from 1938 until the United States entered World War II, was used for summer artillery training. During World War II, it was sequentially designated as an Army Air Force Service Unit Training Center (1942), a Storage Supply Depot of boxed gliders for the Air Service Command (1944), and a German and Italian prisoner-of-war camp (1944-1945). In 1949, the entire Military Reservation was deeded to the Commonwealth of Pennsylvania, but 1420 a. were re-acquired two years later by the Philadelphia District Corps of Engineers. In 1953, the main storage area was constructed by levelling a hill with a 2036 ft. elevation to one with approximately a 2000 ft. elevation. Renamed the Tobyhanna Signal Depot, it served the Corps from 1954 until 1962, when it was transferred to DARCOM and became the Tobyhanna Army Depot. In 1974, two parcels of land totalling 127 a., were transferred from the TOAD to the Township of Coolbaugh for public recreational use and to East Stroudsburg State College for educational purposes. These transfers reduced the facility to its present size of 1293 a.

2.3 ARCHEOLOGICAL RESEARCH DIRECTIONS

2.3.1 Regional Concerns

Archeological data from the Pocono region in which the TOAD is located can contribute to a number of research questions concerning the prehistory and history of northeastern Pennsylvania.

Previous prehistoric archeological research within the general northeastern Pennsylvania region can be divided into three basic categories -- Paleo-Indian research, major regional studies, and small-scale cultural resource management projects.

Systematic Paleo-Indian research in northeastern Pennsylvania was initiated in the 1950s, when the Delaware River drainage became the focus of a study of Paleo-Indian occupational loci (Mason 1959). Since that time, a number of elements have fueled continued interest in early man studies in the area, including a long tradition of work in the field (cf. Volk 1911), a large number of recorded fluted point finds, several Pleistocene-aged megafauna discoveries, and research opportunities for macrofossil and pollen studies. Of particular importance in this continued research effort have been excavations at the Shawnee Minisink site. Most recently, a woolly mammoth was uncovered near Towanda in the summer of 1983. Numerous gaps persist in the archeological study of early man in the Upper Delaware Valley.

The only major regional synthesis that has included northeastern Pennsylvania is Kinsey's (1972) culture history for the Upper Delaware, which is based largely on the Tocks Island Reservoir studies of the late 1960s. This work spurred the development of a regional chronological

framework and a fuller interpretation of prehistoric settlement, subsistence, and lifeways. Again, many questions about human habitation in the valley persist.

The third major category of archeological research includes a series of environmental assessment reports focussing on the relationship of sites to their physiographic settings in attempts to develop predictors of site location (Beckerman 1979; Hatch and Hamilton 1978; Hay 1979). Such concepts require testing and refinement for this region.

Several research questions of potential importance for the historic period in the Pocono Plateau area can be identified. The military activity of the late eighteenth century prompted the construction of a number of small fortifications which might be successfully excavated (Cattell 1912:28-29). Such excavations might provide significant information regarding living conditions within small, frontier forts.

The ruggedness of the Pocono Plateau has channeled human occupations in the region into several specific activities. Farming has and does occur, but is limited to the few locations where level fertile soil can be tilled. Excavations at these farm sites may shed light on specific adaptations made by Euroamerican agriculturalists to these difficult circumstances.

More important to the historical population in the region were the abundant forest, animal, and water resources. Utilization of these resources involved an interlocking system in which the forest produced the lumber for local and external markets as well as bark used in tanneries. Furthermore, water power was a prerequisite for the lumber mills and other manufacturing facilities. The abundant fast-flowing streams thus assured the efficient use of the forest, once roads and railroads provided adequate transport. A better understanding of the interaction between the various elements of these forest-based industries might be obtained through the archeological investigation of relevant sites. Information regarding not only industrial techniques, but also the more mundane activities of workers, foremen, owners, and other individuals might be provided.

As indicated above, the forest-based industries collapsed with the removal of the forest. In their place, ice farming and eventually resort development took the place of the older industries. The particular facilities and behavioral patterns associated with these replacement industries were quite different from their predecessors. Observing the change from resource processing to service-oriented occupations through excavations of ice harvesting facilities, tourist-oriented establishments, and the dwellings of the individuals who operated them may provide data concerning the nature and effects of rapid and drastic socio-economic change.

The Pennsylvania State Plan does not as yet include a study unit for northeastern Pennsylvania. The draft sections which exist for other portions of the state have not been published and are not available.

2.3.2 Installation-Specific Archeological Research Directions

Productive prehistoric archeological investigations have taken place in areas peripheral to the TOAD. However, no sites or artifacts from either prehistoric or historic archeological contexts have been discovered within the boundaries of the TOAD. It is possible, however, that sites of prehistoric and historic age are present.

Given the paucity of archeological research within the Pocono Plateau area, any prehistoric sites that are present within TOAD boundaries can be expected to contribute to a number of general research issues. The construction of local or regional culture historical sequences, the inference of settlement-subsistence systems, and the recognition of specific functional site types are all issues that remain largely uninvestigated within the area. Data from prehistoric sites within TOAD boundaries might be used to address any or all of these issues.

Historic archeological sites which may exist within TOAD boundaries may date to the Pioneer, Forest, or Resort phases of occupation in the Pocono region. While sites of the Pioneer phase are not likely to be present, any such sites would probably relate to the extensive hunting and fishing activities of the initial Euroamerican settlers of the area. Given the poor quality of the soils within the TOAD, evidence of Pioneer phase farming activity would be unexpected. If present, such information would be important in understanding the degree of agricultural intensity characteristic of the phase.

A Forest phase site may be present within the installation, and may consist of the remains of the previously mentioned building owned by the Dodge, Meggs, and Dodge Company. Other Forest phase sites may also be present. Such sites may include isolated dwelling or storehouses utilized by the forest industries, and may reflect the degree and manner in which marginal lands were used by these industries.

Resort phase archeological materials clearly exist within TOAD boundaries and would include military-related activities. Such materials will be of a very specialized nature since they relate to the Tobyhanna Military Reservation (and Camp Summerall) rather than to local socioeconomic patterns. Investigations of the remains of training exercises, including the residue of weapons and weapons use, temporary camps, latrines, garbage pits, barracks, and other structures may produce data concerning life under conditions of rigid military organization with a specific and limited set of objectives.

3.0
AN ASSESSMENT OF ARCHEOLOGICAL RESOURCE PRESERVATION AND SURVEY ADEQUACY

3.1 ENVIRONMENTAL CONSTRAINTS TO SITE PRESERVATION

At the TOAD, the vast majority of locations can be assigned to one of two possible environmental contexts: upland till and marshy land. Upland till is normally less subject to erosion. The presence of 20-40 percent coarse fragments in the A horizon, combined with a parent material of unsorted glacial material, generally reduces erosion by wind or water. Any archeological materials deposited within this context are probably not subject to downslope movement. However, in situ preservation is probably poor within upland till contexts due to the high soil acidity and seasonal water saturation (resulting from fragipans) which act to decay organic material. As a result, non-lithic artifacts are generally not preserved.

Low, swampy ground has the opposite effect with regard to organic materials. In this anaerobic context, preservation is excellent, and any archeological materials deposited in such a context would have a better than average chance for preservation. Furthermore, low swampy areas are generally loci of deposition, and thus are not subject to natural erosional agents.

3.2 HISTORIC AND RECENT LAND USE PATTERNS

During the earlier historic periods, including the Pioneer and Forest phases, surficial resources (trees and animals) were exploited within the boundaries of the TOAD. Some ground disturbance, ranging from the construction of isolated structures to erosion caused by deforestation, undoubtedly occurred at that time. However, the TOAD has been the site of relatively intensive occupation and use only since 1913 when military training first commenced at the facility. The 1923 edition of the Pocono USGS 15 minute Quadrangle Map shows a modest development of roadways and structures in the southeastern corner of the Tobyhanna Military Reservation. Of the 35 structures pictured on the map, only one still remains standing. Presently, this structure is listed in the Building Information Schedule (Tobyhanna Army Depot 1982c) as Building 215 -- Skill Development Center/Water Pump. It was built in 1922.

The construction of numerous other buildings occurred in the late 1920s and in 1943. These structures are still in use. No record was found of any structures built after 1923 which have been demolished.

Most construction of TOAD took place since 1953, the date of its last reactivation. At that time, grading of a large portion of the southern half of the facility occurred to make room for the storage and operations areas. This grading probably removed any remaining portions of the Dodge, Meggs, and Dodge Lumber Company structure shown by Beers (1875). In addition, new housing, service, and recreation facilities were placed over the older occupational areas.

Buildings 202 and 203, both identified as family housing for the grade of Colonel (Tobyhanna Army Depot 1982c), stand at approximately the same location as structures shown on the Pocono USGS 15 minute Quadrangle Map, 1923 edition. However, these structures are listed as having been built in 1953 and 1928, respectively (Tobyhanna Army Depot 1982c). It is possible that newer buildings are standing on the foundations of the pre-1923 structures. A phone conversation with Colonel William Burry, U.S. Army Retired, produced the information that the present Depot Comander's house (Building 202) was on the only 'original' foundation at the Depot.

In addition to construction, the use of Powder Smoke Ridge as an impact area for 75 mm and 155 mm caliber artillery shells certainly disturbed the ground in that area. A small arms training range also 'contaminated' the ground, causing some disturbance in the process. The major episodes of ground disturbances within the TOAD are summarized in Table 3-1.

To better facilitate the discussion of ground disturbance, the land area within the TOAD has been divided into ten separate Ground Disturbance Areas (GDAs) (Figure 3-1). There are two basic considerations which will affect the preservation of any archeological resources which might exist within these GDAs. First, construction activities including grading and excavation, and second, military training, particularly with heavy weapons, which has caused disturbance within the limited confines of impact areas. Each GDA is evaluated with regard to these factors.

GDA-1. This GDA is composed of four areas of early construction shown on the Pocono USGS 15 minute Quadrangle Map, 1923 edition. No information with regard to the type or function of these structures, now demolished, was located. It may be assumed that the structures nearest the railroad spur on the southern border of the facility were warehouses or receiving stations of some type. The remainder may have been residences, offices, storage facilities, or shops of some type.

GDA-1 was built upon in subsequent years as well, although to a lesser extent. It is estimated that 60-90 percent of GDA-1 is disturbed, with the maximum depth of disturbance estimated at 3 to 6 ft. Soils in this area are categorized as cut and fill (USDA 1981, Sheet Number 5).

The estimated depth of disturbance is not based on any hard evidence, but is derived instead from generalizations concerning house foundations and utility line excavations.

GDA-2. Powder Smoke Ridge comprises GDA-2. This was an artillery impact

Table 3-1. A SUMMARY OF HISTORIC AND MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE ON THE TOBYHANNA ARMY DEPOT

GDA No	Type of Disturbance	Date Conducted (yr)	Reference[a]	Area Disturbed (acres)	Estimated Depth Below Surface (ft)	Ratio of Disturbed to Total Area	Location of Disturbed Area					USGS Quad Sheet[c]	Coincidental Sites[d]
							UTM[b]		Legal Reference				
							Northing	Easting	Township	Range	Section		
GDA-1	Construction of:		MPBIM 18-02-08 Tobyhanna Army Depot 1982a	49	3-6	9:10	4559439	464621	Tobyhanna			T773	TOAD-2-33
	Gate 102	1943					4558913	464461					
	Building 100	?					4558870	464535					
	Building 103	1962					4558730	464496					
	Building 104	1962					4558668	464574					
	Baseball diamond 101	?					4558540	464524					
	Building 334	?					4558415	464777					
	Building 333	1978					4558832	464901					
	Building 300	1971					4558832	465119					
	Building 403	1943					4559186	465107					
	Building 816	1943											
	Test flow 407 -434												
GDA-2	Construction of:		MPBIM 18-02-08 Tobyhanna Army Depot 1982a	320	3-6	1:10	4561000	464190	Tobyhanna			T773	
	Not developed	NA					4560658	464239					
							4560693	464276					
							4560713	464460					
							4560562	464562					
							4560722	464608					
							4560764	464680					
							4561125	464604					
GDA-3	Construction of:		MPBIM 18-02-08 Tobyhanna Army Depot 1982a	6	6	6:10	4560586	464232	Tobyhanna			T773	
	Borrow area	?					4560565	464200					
							4560492	464215					
							4560509	464251					
GDA-4	Construction of:		MPBIM 18-02-08 Tobyhanna Army Depot 1982a	1	.5-3	1:10	4560680	463092	Tobyhanna			T773	
	Small arms area	1954					4560684	463070					
							4560669	463064					
							4560661	463083					
							4560456	463073					
							4560459	463046					

Table 3-1. A SUMMARY OF HISTORIC AND MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE ON THE TOBYHANNA ARMY DEPOT (Cont'd)

GDA No	Type of Disturbance	Date Conducted (yr)	Reference[a]	Area Disturbed (acres)	Estimated Depth Below Surface (ft)	Ratio of Disturbed to Total Area	Location of Disturbed Area: UTM[b] Northing	UTM[b] Easting	Legal Reference: Township	Range	Section	USGS Quad Sheet[c]	Coincidental Sited
GDA-5	Construction of:		MPBM 18-02-08	117	.5-3	2:10	4558415	464485	Tobyhanna			T773	
	Baseball Diamond	?	TOAD 1982a				4558551	464543					
	Building 404	1961					4558699	464590					
	McIntosh Rd	?					4558750	464516					
	Barney's Lake	?					4558882	464547					
	Building 36-						4558944	464473					
	Rearing Pond	?					4559501	464648					
	Building 37-	?					4559913	464586					
	Bridge						4560341	464586					
	Building 39-						4560260	464485					
	Sentry Station	1975					4559470	464216					
	Building 600-						4558719	464026					
	Picnic Area	?											
	Building 601	1968											
	Building 603-	?											
	Pavilion	?											
	Railroad Spur	?	Ranker and Kiefere (n.d.)										
GDA-6	Construction of:		MPBM 18-02-08	343		9:10	4561283	463454	Tobyhanna			T773	TOAD-1
	Perimeter Rd.	?	TOAD 1982a				4560758	463154					
	Building 46-						4559730	463142					
	Settling tank	?					4558703	464030					
	Building 24	1954			.5-3		4560166	464461					
	Building 242	?			?		4560493	464185					
	Building 247	?			?		4560843	464247					
	Building 241-	?					4560925	463843					
	Filter												
	Building 244-												
	Filters Trickling	?											
	Building 245	?											
	Building 246	?											
	Test Pad (1)	?											
	Building 23-	1955			3-6								
	RR Engine												
	Shop												
	Test Pad (2)	?											
	Building 97	1969			.5-3								
	Building 98	1970			.5-3								

Table 3-1. A SUMMARY OF HISTORIC AND MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE ON THE TOBYHANNA ARMY DEPOT (Continued)

GDA No	Type of Disturbance	Date Conducted (yr)	Reference[a]	Area Disturbed (acres)	Estimated Depth Below Surface (ft)	Ratio of Disturbed to Total Area	Location of Disturbed Area					USGS Quad Sheet[c]	Coincidental Sites[d]
							UTM[b]		Legal Reference				
							Northing	Easting	Township	Range	Section		
GDA-6 (Cont'd)	Building 99	1968			.5-3								
	Building 19	1954			3-6								
	Building 43	1955			3-6								
	Building 44	1955			.5-3								
	Building 40	1981			.5								
	Building 42	1954			.5-3								
	Building 41-Fac. Engr. Structure	1954			.5-3								
	Building 18	1954			3-6								
	Building 22-Heating Plant	1954			3-6								
	Building 17-Fire Station	1954			3-6								
	Building 21	1954			.5-3								
	Building 26-Sub-Station	?											
	Building 16-Salv. & Sur. Prop.	1954			3-6								
		?											
	Building 15-Equip. Mgr. Fac.	1954			3-6								
	Building 123-Fuel Disp. Fac.	1978			.5-3								
	Building 14-Elec. Maint. Shop	1954			3-6								
	Building 27	?											
	Flagpole	?											
	Myer Street	?											
	Building 11-Post HQ Building	1954			.5-3								
		?											
	Building 68-Elect. Maint. Shop	1955			3-6								
	Building 3-Gen. Purp. Whse.	1953			.5-3								

Table 3-1. A SUMMARY OF HISTORIC AND MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE ON THE TOBYHANNA ARMY DEPOT (Continued)

GDA No	Type of Disturbance	Date Conducted (yr)	Reference[a]	Area Disturbed (acres)	Estimated Depth Below Surface (ft)	Ratio of Disturbed to Total Area	Location of Disturbed Area: UTM[b] Northing	UTM[b] Easting	Legal Reference: Township	Range	Section	USGS Quad Sheet[c]	Coincidental Sites[d]
GDA-6 (Cont'd)	Building 2-Gen. Purp. Whse	1953			.5-3								
	Building 7-Con. Hum. Whse.	1954											
	Building 8-Con. Hum. Whse.	1953											
	1st Street	?											
	2nd Street	?											
	3rd Street	?											
	4th Street	?											
	Squire Street	?											
	Building 10-Box Shop Elect Maint. Shop	1954	Gilboy, O'Malley and Stopper 1952		.4-3 .5-3								
	Building 90	1962			3-6								
	Building 91	1966			3-6								
	Building 92	1966			3-6								
	Building 621-Elect. Maint. Shop	1954			.5-3								
	Building 94	1969			.5-3								
	Building 93	1969			.5-3								
	Building 95	1966			3-6								
	Building 96	?											
	Building 9-Elect. Mnt. Shop.	1969			.5-3								
	Building 6-Gen. Purp. Whse.	1954			.5-3								
	Building 4-Gen. Pump. Whse.	1954			.5-3 .5-3								
	Building 5 -Con. Hum. Whse.	1954											
	Test Pad	?											
	Tower	?											
	5th Street	?											
	6th Street	?											
	Building 12-Flammable Mat.	1954			.5-3								

Table 3-1. A SUMMARY OF HISTORIC AND MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE ON THE TOBYHANNA ARMY DEPOT (Continued)

GDA No	Type of Disturbance	Date Conducted (yr)	Reference[a]	Area Disturbed (acres)	Estimated Depth Below Surface (ft)	Ratio of Disturbed to Total Area	Location of Disturbed Area					USGS Quad Sheet[c]	Coincidental Sitesd
							UTMb		Legal Reference				
							Northing	Easting	Township	Range	Section		
GDA-6 (Cont'd)	Building 13-Storhs. Cold Storage Whse.	1954			.5-3								
	Building 49-Ld.-Unld. Depot	?											
	Ammunition Storage	?											
	Building 66	1955			3-6								
	Helipad	?											
	RR tracks	1965			3-6								
	Parking facilities	?											
	Gibbs Street	?											
GDA-7	Construction of:	?	MPBIM 18-02-08	41		7:10	4561147	462781	Tobyhanna			T773	
	Range Road		TOAD 1982a		2		4559995	462967					
	Classification Yard	?			?		4559715	463142					
					3-6		4560754	463154					
	Landfill	post-1979	Martin Associates 1979		3-6								
GDA-8	Construction of:		MPBIM 18-02-08	124		9:10	4650271	456356	Tobyhanna			T773	
	Midway Road	?	TOAD 1982a				4560217	464917					
	Building 54-Waiting Shelter	1954			.5-3		4559968	464921					
							4560808	464247					
	Building 32-Mars. Station	1957			.5-3		4560462	464181					
							4560139	464461					
	Main Parking Area	1958	Dwg. A-8-23 (Office of the Post Engineer) (3/21/58)		1.5		4560190	464648					
							4559419	464637					
							4559135	465115					
	Building 33	?			.5-3		4558983	465290					
	Building 34-Phys. Fit. Center	1958					4559509	465330					
							4559520	465146					
	Building 218	?											
	Test Pad	?											
	Building 312	1927			3-6								
	Building 311	1927			3-6								
	McDonough St.	?											
	Building 509	?											
	Building 508	?											

Table 3-1. A SUMMARY OF HISTORIC AND MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE ON THE TOBYHANNA ARMY DEPOT (Continued)

GDA No	Type of Disturbance	Date Conducted (yr)	Reference[a]	Area Disturbed (acres)	Estimated Depth Below Surface (ft)	Ratio of Disturbed to Total Area	Location of Disturbed Area						
							UTM[b]		Legal Reference			USGS Quad Sheet[c]	Coincidental Sites[d]
							Northing	Easting	Township	Range	Section		
GDA-8 (Cont'd)	Bell St. Playground (#1)	?											
	Building 506	1978			.5-3								
	Building 507	1978			.5-3								
	Building 504	1978			.5-3								
	Building 503	1978			.5-3								
	Marconi Court Playground (#2)	?											
	Building 502	1978			.5-3								
	Building 501	1978			.5-3								
	Building 500	1978			.5-3								
	Morse Court	?											
	Building 220	1926			.5-3								
	Building 219	?											
	Building 216	?											
	Building 217	?											
	Building 215-Cen. Skill Dev.	1922											
	Westover Dr.	?											
	Building 105	?											
	Building 201	1953			.5-3								
	Building 202	1953			.5-3								
	Building 203	1928			.5-3								
	Building 204	1960			.5-3								
	Building 209-Officer's Open Mess	1953			.5-3								
	Building 232 Flagpole												
	Building 230-E.M. Hks.	1950			.5-3								
	Building 1004	1943			.5-3								
	Building 1005	1943			.5-3								
	Building 1001	1943			.5-3								
	Building 1003	1943			.5-3								
	Building 1006	1943			.5-3								
	Building 1008	1943			.5-3								
	Building 1009	1943			.5-3								

Table 3-1. A SUMMARY OF HISTORIC AND MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE ON THE TOBYHANNA ARMY DEPOT (Continued)

GDA No	Type of Disturbance	Date Conducted (yr)	Reference[a]	Area Disturbed (acres)	Estimated Depth Below Surface (ft)	Ratio of Disturbed to Total Area	Location of Disturbed Area						
							UTMb		Legal Reference			USGS Quad Sheet[c]	Coincidental Sited
							Northing	Easting	Township	Range	Section		
GDA-8 (Cont'd)	Building 1010	1943			.5-3								
	Building 1011	1943			.5-3								
	Building 1012	1943			.5-3								
	Building 1013	1943			.5-3								
	Building 1015	1943			.5-3								
	Building 1016	1943			.5-3								
	Building 1017	1943			.5-3								
	Building 1018	1943			.5-3								
	Building 1019	1943			.5-3								
	Building 1023	1943			.5-3								
	Building 1024	1943			.5-3								
	Building 1025	1943			.5-3								
	Building 1034	1943			.5-3								
	Building 1027	1943			.5-3								
	Building 1033	1943			.5-3								
	Wherry Housing	1943			.5-3								
GDA-9	Construction of:		MPBIM 18-02-08	5		9:10	4560760	463392	Tobyhanna		T773		
	Building 28-Water Storage Tank	?	TOAD 1982a				4560772	463360					
							4560721	463346					
	Building 29-Water Storage Tank	?					4560701	463373					
	Building 50-Comm. Eqp. Fac.	1957			.5-3								
	Building 51-Comm. Eqp. Fac.	?											
	Building 52	?											
	Building 53	1965			.5-3								
GDA-10	Construction of:		MPBIM 18-02-08	287		1:10	4560654	464408	Tobyhanna			T773	
	Range Road	?	TOAD 1982a				4560506	464364					
	Ridge Road	?					4560432	464374					
							4560342	464450					
							4560466	464515					
							4560368	464598					
							4560350	464679					
							4560177	464818					
							4560229	464814					
							4560230	464800					

Table 3-1. A SUMMARY OF HISTORIC AND MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE ON THE TOBYHANNA ARMY DEPOT (Continued)

GDA No	Type of Disturbance	Date Conducted (yr)	Reference[a]	Area Disturbed (acres)	Estimated Depth Below Surface (ft)	Ratio of Disturbed to Total Area	Location of Disturbed Area						
							UTM[b]		Legal Reference			USGS Quad Sheet[c]	Coincidental Sited
							Northing	Easting	Township	Range	Section		
GDA-10 (Cont'd)							4560265	464801					
							4560610	464731					
							4560585	464677					
							4560481	464646					
							4560585	464677					
							4560481	464646					
							4560585	464577					
							4560577	464449					
							4560550	464424					

Notes:

a. Drawings on file at TOAD. Drawing numbers efer to TOAD file numbers.
b. UTM Zone 18.
c. T773 = USGS Topographical Map, Tobyhanna, 7.5 minute, 1965 photo revised 1973.
d. Within the GDA.

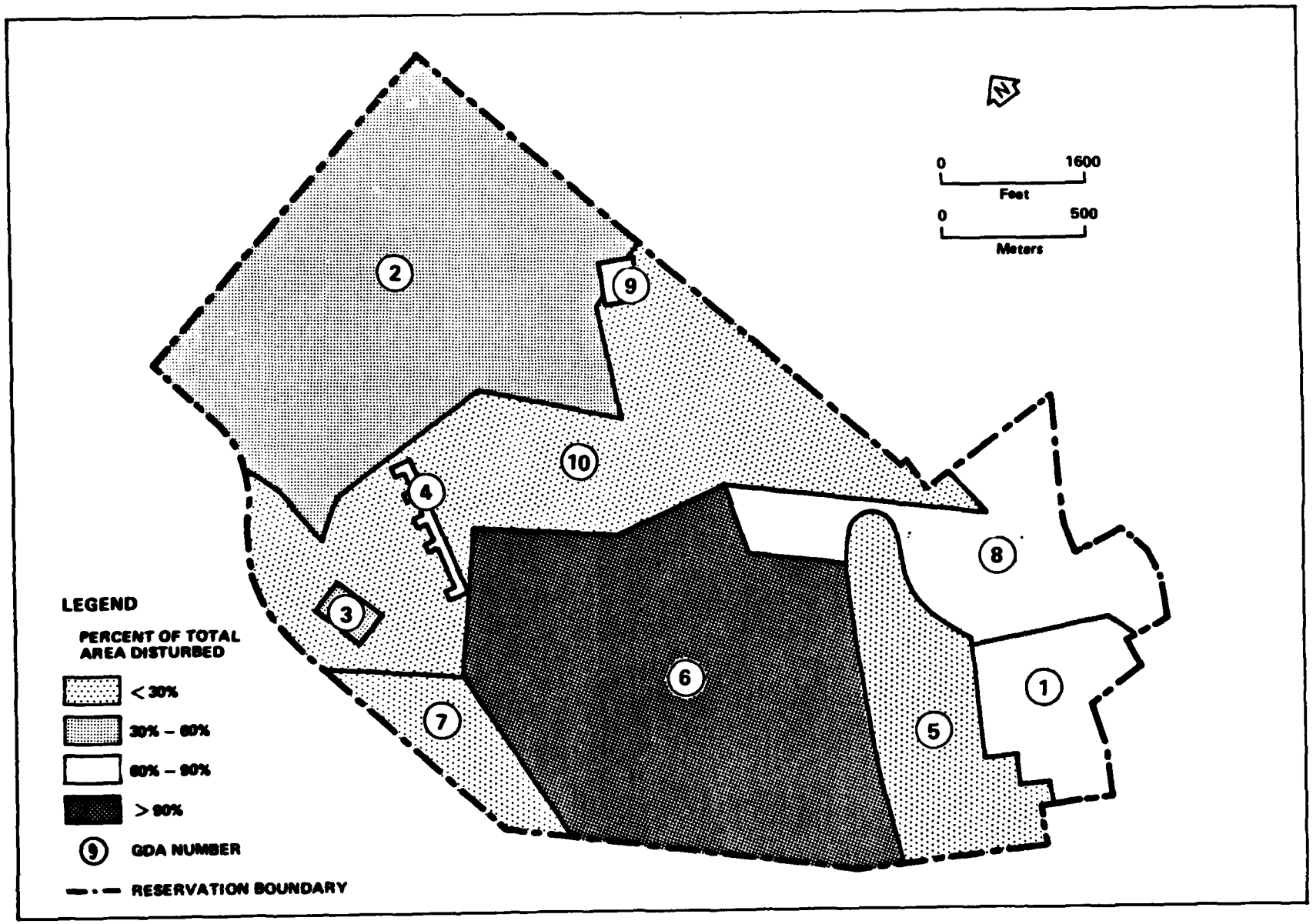

Figure 3-1. A MAP OF AREAS OF HISTORIC AND/OR MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE ON THE TOBYHANNA ARMY DEPOT

area between 1913 and 1918, and again between 1938 and 1941. Ranging up to 155 mm, artillary rounds cratered the ground surface (TOAD 1982a). It is estimated that 30-60 percent of GDA-2 has been disturbed by artillery bombardment. The depth of disturbance based on observation is estimated at 3 to 6 ft.

GDA-3. This is a borrow area shown on the TOAD General Site Map (TOAD Dwg. 18-02-08). Examination of topographic contours indicates that in this area a knoll has been deeply excavated. Approximately 30-60 percent of the knoll has been removed and 6 to 10 ft. of the knoll face is exposed.

GDA-4. The small arms range which comprises GDA-4 consists of 20 firing points with targets at 100, 200, 300, and 500 yd., and a 1000 ft. fixed position range for machine guns. These ranges are now inactive. Estimates of ground disturbance from point construction and round impact are 60-90 percent with a depth of disturbance of 6 in. to 3 ft.

GDA-5. GDA-5 is comprised of the Passion Recreation Area. It consists of Barney's Lake at the headwater of Hummler Run and the surrounding relatively undeveloped area east of Midway Road, west of Neely Street and south of McDonough Street. Examination of the 1923 USGS Pocono 15 minute Quadrangle Map and the 1982 TOAD General Site Plan (TOAD Dwg. 18-02-08) did not reveal any major changes in the topography of this area. The records examined do not indicate any ground disturbance other than and the damming of Hummler Run to form Barney's Lake with its associated pavilion and picnic area. It is estimated that less than 30 percent of GDA-5 has been disturbed and that disturbance is less than 6 in. in depth.

GDA-6. The operational area of the TOAD, GDA-6, is located on a totally graded surface. The area exhibits an elevational difference of 36 feet between the 1923 edition of the Pocono USGS 15 minute Quadrangle Map, and the 1968 edition Tobyhanna USGS 7.5 minute Quadrangle Map. Given the immense amount of grading represented by this change, it is estimated that over 90 percent of GDA-6 has been disturbed and that the depth of disturbance is over 6 ft.

GDA-7. Railroad yards and landfill make up GDA-7. Examination of the 1968 USGS 7.5 minute Tobyhanna Quadrangle Map and the 1982 TOAD General Site Map (TOAD Dwg. 18-02-08) indicates that 20 to 25 ft. of fill has been placed within GDA-7. Prior to fill placement, the area was a swampy depression. The depth of the disturbance under the landfill is estimated at about 6 in. to accommodate the effects of heavy equipment used to haul the fill. Depth of disturbance within the railroad yards is estimated at 6 in. to 3 ft.

GDA-8. The community and training area which comprises GDA-8 is located within the area of earliest construction at the TOAD. GDA-8 contains 56 buildings and 2 recreational areas. All of the buildings have continuous footing foundations of concrete, reinforced concrete, or stone (TOAD 1982c). In addition, steam heating, water, drainage, and sanitary sewer lines connect the majority of the buildings through underground lines. It is estimated that the community and training area exhibits areal

disturbance of 60-90 percent. Maximum depth of disturbance is estimated at 3 to 6 ft. The 1923 edition of the Pocono USGS 15 minute Quadrangle Map shows GDA-8 as swampy. Soil survey map data from 1981 characterizes GDA-8 as comprised of cut and fill soils (USDA 1981, Sheet Number 5). It is possible that when the GDA-6 area was cut, the excess materials were used for the filling-in of GDA-8.

GDA-9. The water storage and communication area, GDA-9, is a small plot occupied by two large water storage tanks and other structures related to the TOAD communications network. The buildings generally have continuous concrete footing foundations. It is estimated that 60-90 percent of GDA-9 is disturbed to a maximum depth of 6 in. to 3 ft.

GDA-10. This area includes Oakes Swamp, the radar range and areas of intervening high ground. Examination of the 1923 USGS Pocono 15 minute Quadrangle Map and the 1982 TOAD General Site Plan (TOAD Dwg. 18-02-08) did not reveal any major changes in the topography of this area. TOAD records indicate that the only ground disturbance in the area is the access road to Powder Smoke Ridge. It is estimated that less than 30 percent of GDA-10 has been disturbed to an indeterminate depth.

3.3 PREVIOUS CULTURAL RESOURCE INVESTIGATIONS: COVERAGE AND INTENSITY

No systematic archeological investigations have been conducted at the TOAD (Tables 3-2 and 3-3). In 1978, an inquiry regarding archeological sites within TOAD boundaries was made to the Meesing Nature Center at Stroudsburg, Pennsylvania. No archeological sites were on record (Tobyhanna Army Depot 1982a).

3.4 SUMMARY ASSESSMENT OF DATA ADEQUACY, GAPS

Although no known or potential prehistoric archeological sites have been recorded for the TOAD, undiscovered sites may exist at the installation. The lack of previous surveys of the facility makes it difficult to estimate the probability that such sites are present. Existing predictive models of site location (e.g. Beckerman 1979; Hatch and Hamilton 1978; Hay 1979) suggest that areas within the TOAD that have the highest probability of containing archeological sites include high ground immediately adjacent to swampy land, high ground separating two swampy areas, and toes of knolls (especially if associated with a stream head). Such areas within the TOAD include the margins of Oakes Swamp, the margins of the swamp at the head of Tobyhanna Lake, and the area separating the two.

Including the Dodge, Meggs, and Dodge structure and the demolished military buildings from the early twentieth century, it is probable that all potential historical archeological sites have been identified for the TOAD facility. The locations of the above structures are indicated in Figure A-1 (Beers 1875:21; Pocono USGS 15 minute Quadrangle Map, 1923 edition).

TABLE 3-2. ARCHEOLOGICAL SURVEYS CONDUCTED ON THE TOBYHANNA ARMY DEPOT

Survey Administration					Survey Location						Survey Characteristics							Identified Archeological Resources	
					UTM		Legal Description												
SHPO Survey No.	Survey Institution Firm	Survey Date (yr)	Survey Record Repository	Bibliographic Reference	Northing	Easting	Township	Range	Section	USGS Quad Map	Collection Policy	Curatorial Repository	Survey Type Area	Temporal Coverage	Transect Type, Interval (m.)	Rate (a./person day)	Subsurface Tests	Sites	Isolated Finds, Features
NONE																			

TABLE 3-3. ARCHEOLOGICALLY RELEVANT RESEARCH INVESTIGATIONS, EXCLUSIVE OF ARCHEOLOGICAL SURVEYS, CONDUCTED ON THE TOBYHANNA ARMY DEPOT

Study No.	Study Type	Study Date	Institution Agency, Firm	Principal Investigator	Bibliographic Reference	Location						
						UTM		Legal			USGS Quad Map	Associated Archeological Resources
						Northing	Easting	Township	Range	Section		
NONE												

4.1 KNOWN ARCHEOLOGICAL RESOURCES ON TOAD

There are no currently known prehistoric or historic archeological resources within the boundaries of the TOAD (Tables 4-1, 4-2, 4-3).

4.2 POTENTIAL ARCHEOLOGICAL RESOURCES ON TOAD

There are no known potential prehistoric archeological resources within the boundaries of the TOAD (Table 4-4). However undiscovered sites may exist, especially near swampy areas. In addition, a review of the literature revealed several potential historic archeological sites on TOAD property. A single structure was located on the southern edge of this property during the Forest Phase (Beers 1875). During the early Resort Phase, 32 structures once stood within the southeastern corner of the property.

A list of these potential archeological sites is presented in Table 4-4.

4.2.1 Forest Phase Archeological Sites

The earliest available map of the area now included within the TOAD indicates the existence of a single structure (TOAD -1) (Table 4-4) near the southern boundary of the property. This structure was owned by the Dodge, Meggs, and Dodge Lumber Company. Its function is not known (Beers 1875). The locality occupied by the structure falls within GDA-6. The grading activities that took place within this area have probably destroyed any archeological remains associated with the structure.

4.2.2 Resort Phase Archeological Sites

During the early twentieth century approximately 35 structures were constructed within the boundaries of the TOAD. With the exception of Bldg. 215 and the possible exception of two foundations supporting Bldgs. 202 and 203, all of these structures have been demolished thus producing a potential archeological site complex consisting of the remains of all or some of 32 structures (TOAD - 2-33) (Table 4-4) (Pocono USGS 15 minute Quadrangle Map, 1923 edition; TOAD 1982a). Although the specific functions of these structures are not known, they were part of the Tobyhanna Military Reservation and served in a military capacity. All of these demolished structures fall within GDA-1, an area characterized

Table 4-1. PRESENTLY IDENTIFIED ARCHEOLOGICAL RESOURCES ON THE TOBYHANNA ARMY DEPOT: ADMINISTRATIVE DATA

Site Number	Site Recorder	Date of Site Record	SHPO Survey Number	Site Record Repository	Survey Collection Policy	Current Status of Investigation	NRHP Status	State, Local Status	Architectural Association	Bibliographic Reference
NONE										

Table 4-2. PRESENTLY IDENTIFIED ARCHEOLOGICAL COMPONENTS ON THE TOBYHANNA ARMY DEPOT: DESCRIPTION AND EVALUATION

Site Number	Unit Age				Unit Description							Evaluation			
	Date		Temporal Unit						Dimension						
	DM	Years BC/AD	Tradition	Phase (Period)	Artifacts	Features	Depositional Context	Landform	Area (m^2)	Depth (m)	Ascribed Function	Percent Intact	Value Integrity	RV	CR

NONE

Table 4-3. PRESENTLY KNOWN ARTIFACT, ECOFACT, OR DOCUMENTARY COLLECTIONS FROM ARCHEOLOGICAL RESOURCES ON THE TOBYHANNA ARMY DEPOT

Site Number, Name	Collection Location		Collection Characteristics					
			Artifact		Ecofact		Documentary	
	Curatorial Repository	Accession Number(s)	Brief Description	Size/No.	Brief Description	Size/No.	Brief Description	Size/No.
NONE								

Table 4-4. POTENTIALLY IDENTIFIABLE BUT NOT PRESENTLY RECORDED ARCHEOLOGICAL RESOURCES ON THE TOBYHANNA ARMY DEPOT

Site Number, Name[a]	Reference	Description	Research Value CR[b]
TOAD - 1	Beers 1875	Unidentified structure associated with Dodge, Meggs and Dodge	2
TOAD - 2	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 3	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 4	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 5	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 6	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 7	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 8	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 9	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3

Table 4-4. POTENTIALLY IDENTIFIABLE BUT NOT PRESENTLY RECORDED ARCHEOLOGICAL RESOURCES ON THE TOBYHANNA ARMY DEPOT

Site Number, Name[a]	Reference	Description	Research Value CR[b]
TOAD - 10	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 11	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 12	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 13	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 14	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 15	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 16	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 17	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 18	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3

Table 4-4. POTENTIALLY IDENTIFIABLE BUT NOT PRESENTLY RECORDED ARCHEOLOGICAL RESOURCES ON THE TOBYHANNA ARMY DEPOT

Site Number, Name[a]	Reference	Description	Research Value CR[b]
TOAD - 19	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 20	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 21	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 22	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 23	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 24	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 25	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 26	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 27	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3

Table 4-4. POTENTIALLY IDENTIFIABLE BUT NOT PRESENTLY RECORDED ARCHEOLOGICAL RESOURCES ON THE TOBYHANNA ARMY DEPOT

Site Number, Name[a]	Reference	Description	Research Value CR[b]
TOAD - 28	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 29	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 30	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 31	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 32	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3
TOAD - 33	USGS 1923	Unidentified structure associated with Tobyhanna Military Reservation	3

Notes:

[a] Designations assigned for this study

[b] Confidence Rating (CR): 1 = resources has little research value or the information about it is unreliable, 2 = resources may have research value and the information about it is probably reliable. 3 = resources may have research value and the information about it is reliable.

by 30 to 60 percent areal disturbance and 3 to 6 ft. in depth of disturbance. The soil survey map for the TOAD area of Monroe County, Pennsylvania, shows GDA-1 as comprised of cut and fill (USDA 1981, Sheet Number 5). Under these circumstances, foundations or foundation remnants of some of these structures may exist, and may be associated with intact middens.

5.0
AN ASSESSMENT OF THE SIGNIFICANCE OF THE ARCHEOLOGICAL RESOURCE BASE ON THE TOBYHANNA ARMY DEPOT

5.1 THE SIGNIFICANT RESOURCE BASE

There are no known prehistoric archeological resources located on TOAD property. However, such sites may exist. Given the paucity of information concerning the prehistory of northeastern Pennsylvania in general and the Pocono Plateau specifically, any sites located within the TOAD should possess considerable potential to contribute information on many aspects of prehistoric lifeways.

There are no known historic archeological sites within the TOAD property. As with prehistoric sites, presently unlocated historic sites may exist within Depot boundaries. Any such sites that are present predate 1875 and relate to the Pioneer or Forest historic phases. The potential significance of these early historic sites is again considerable, since they might contribute to an understanding of the day-to-day lives of the early inhabitants of the area, and to knowledge concerning the early development of the forest-related industries of the region.

In addition to unlocated historic sites, the locations of now demolished structures dating to two historic phases have been identified (Table 4-4). Whether any of these potential historic sites is represented by intact archeological remains is not known.

The degree of prior ground disturbance at the TOAD (Table 3-1) has been estimated. However, the nature and depth of disturbance is extremely idiosyncratic in most instances, varying from one small area to the next. As a result, the archeological significance of any potential site is directly related to its physical integrity. For the purposes of the following assessment of significance, it is assumed that intact archeological remains associated with each site possess at least some degree of physical integrity.

5.1.1 Forest Phase Sites on TOAD

A potential site dating to the Forest Phase (Beers 1875) consists of the remains of a single structure of unknown function or type. Lacking any of this information makes it difficult to assess site significance. Since the structure was owned by the Dodge, Meggs, and Dodge Lumber

Company, it may have functioned as some type of lumbering facility (Table 5-1). It is unlikely that this structure's remnants would contribute much insight into the history of the Dodge, Meggs and Dodge Lumber Company operation. It is unlikely to be a significant resource.

5.1.2 Resort Phase Sites on TOAD

A potential site complex dating to the early twentieth century exists within the TOAD boundaries. A general identification of these as military structures is possible. Structure-specific functional assessments are not possible. The significance of the complex of structures is difficult to assess. Considering their lack of antiquity, documentary records might provide a more valuable source of information than the physical remains of the structures themselves. However, such records are often incomplete and inaccurate; the excavation of some or all of the complex might therefore lead to valuable insights regarding everyday life at early twentieth century military installations and the differing life circumstances of those at different levels of the hierarchical structure characteristic of military organizations (Table 5-1).

5.2 IDEAL GOALS AND OBJECTIVES

Given the total absence of known, significant archeological resources on TOAD property, a discussion of how to best study and manage resources which might be identified in the future would be premature. However, given the possible existence of unlocated prehistoric and historic archeological sites and confirmed the existence of potential historic archeological sites, the obvious first objective of future archeological work at TOAD should be that of determining whether potentially significant sites are extant. This would involve subsurface testing to locate both prehistoric and historic sites. It is discussed in greater detail in Section 6.0.

Table 5-1. SUMMARY OF SIGNIFICANT ARCHEOLOGICAL RESOURCES ON THE TOBYHANNA ARMY DEPOT

Temporal Unit	Thematic Unit	Resource Type	Type Occurrence: Known Occurrences (no.)	Type Occurrence: Potential Occurrences (no.)	Type Occurrence: Other Likely Occurrences	Sociocultural Assn.	Landform Assn.	Physical Integrity	Research Value[a]	RV CR[b]	Sociocultural Value[c]	SCV CR[b]
Resort Phase	Military Buildings		0	32	-	American	NA	?	3	3	1	2
Forest Phase	Single Unidentified Structure		0	1	-	American	NA	?	3	2	1	2

Notes:

a. This is a subjective summary assessment of the overall research value (RV) of the resource class. It is an evaluation of the class' quality of preservation, representation of activity diversity or uniqueness, and temporal distinctiveness or reflection of diachronic relationships. It incorporates the need to avoid triviality, but to acquire what may be redundant data so as to discern patterns among those data. Based on these research values, the resource class under discussion is ranked from 0 (no value) to 5 (highest value), including "NA" if such an evaluation is believed to be impossible given the available information.

b. The Confidence Rating (CR) is a further evaluation of the preceived reliability of the research (RV) or sociocultural (SCV) values of the resource class. The following code records a judgement of that reliability, based on the available information: (1) the judgement is more guess than science, and likely not to be reliable; (2) the judgement is moderately reliable; (3) the judgement is most likely reliable.

c. This is a subjective summary assessment of the overall sociocultural value (SCV) of the resource class. It is an evaluation of the social, religious, or political importance of the resource to a contemporary community, from 0 (no value) to 5 (highest value).

6.0
A RECOMMENDED ARCHEOLOGICAL MANAGEMENT PLAN FOR THE TOBYHANNA ARMY DEPOT

6.1 FACILITY MASTER PLANS AND PROPOSED IMPACTS

6.1.1 Proposed Construction

The Master Plan for the Tobyhanna Army Depot includes numerous projects proposed for future development (Abe Gonzalez, 1984, Personal Communication). The projects which will result in ground disturbance and therefore possible disturbance to archeological cultural resources are outlined in Table 6-1 and are shown on Figure 6-1.

These projects are concentrated in two general areas of the TOAD facility. Projects a-q, described below, are scheduled to be built in TOAD's operational area. This area discussed in Chapter 3.0 (section 3.2, GDA-6), has been previously disturbed by grading. Disturbance is estimated to over 6 ft., thus these projects will probably have no or only minimal impact on archeological resources.

The second area where proposed future development is planned is the TOAD community and training area. It has been estimated that this area has also been disturbed but to a lesser degree, approximately 3 to 6 ft. (Chapter 3.0, section 3.2, GDA-8). Projects r-v will probably also have no or only minimal impact on archeological resources.

Proposed projects in the operational area include:

a) Shelter Movement Handling Facility. This is a 187,750 sq. ft. structure to be built during FY84, approximately southeast of Bldg. 6, southeast of 4th Street and northeast of Gibbs Street (Figure 6-1, Number 14). This will be a slab construction to be placed on leveled fill.

b) Expansion Mobile Support Facility (UMMCA and EIP). This will involve an expansion of Bldg. 9 to 16,000 sq. ft. (Figure 6-1, Number 29). This is scheduled for FY84.

c) Hazardous Materials Spill Control Facility. This is scheduled for FY84. It will be located west of Bldg. 13 (Figure 6-1, Number 7). This 16,900 sq. ft. structure will include a sloped depressed floor leading to trenches, leading to sumps.

Table 6-1. A SUMMARY OF ON-GOING AND PLANNED ACTIVITIES ON THE TOBYHANNA ARMY DEPOT THAT COULD AFFECT ARCHEOLOGICAL RESOURCES

Activities						Associated Resources				Impacts		
Description	Date	Area[a]	Size (a.)	Estimated Depth Below Surface (ft.)	Ratio of Disturbed to Total Area	Resource Class	Resources Known or Predicted[b]	NRHP Status	Other Value	Direct	Indirect	Mitigation Options[c]
Proposed Projects in the Operational Area:												
Shelter Movement Handling Facility	1984		4.3	0-1	.1:10	Prehistoric Sites	+		No	No	No	SST
Expansion Mobile Support Facility	1984		.4	0-1	.1:10	Prehistoric Sites	+		No	No	No	SST
Hazardous Materials Spill Control Facility	1984		.4	0-1	.1:10	Prehistoric Sites	+		No	No	No	SST
Sewage Treatment Upgrade	1987					Prehistoric Sites	+		No	No	No	SST
Tactical End Item Repair Facility	1988		2	0-1	.1:10	Prehistoric Sites	+		No	No	No	SST
SATCOM Facility	1989		1	0-1	.1:10	Prehistoric	+		No	No	No	SST
Industrial Operations Facility	1989		2	0-1	.1:10	Prehistoric Sites	+		No	No	No	SST
Defense Special Missions Facility	1990		.4	0-1	.1:10	Prehistoric Sites	+		No	No	No	SST
Surveillance Weapons Test/ Repair Center	1990		2	0-1	.1:10	Prehistoric Sites	+		No	No	No	SST
Waste Recovery Incinerator	1991		.02	0-1	.1:10	Prehistoric Sites	+		No	No	No	SST
Communications Commodities Facility	1993		5	0-1	.1:10	Prehistoric	+		No	No	No	SST
Total Systems Fielding Facility	1994		3	0-1	.1:10	Prehistoric Sites	+		No	No	No	SST

Table 6-1. A SUMMARY OF ON-GOING AND PLANNED ACTIVITIES ON THE TOBYHANNA ARMY DEPOT THAT COULD AFFECT ARCHEOLOGICAL RESOURCES

Activities						Associated Resources				Impacts		
Description	Date	Area[a]	Size (a.)	Estimated Depth Below Surface (ft.)	Ratio of Disturbed to Total Area	Resource Class	Resources Known or Predicted[b]	NRHP Status	Other Value	Direct	Indirect	Mitigation Options[c]
Raw Stock Storage Facility	1995		.7	0-1	.1:10	Prehistoric Sites	+		No	No	No	SST
Special Commodities Storage Facility	1996		4	0-1	.1:10	Prehistoric Sites	+		No	No	No	SST
General Purpose Warehouse	2000		5	0-1	.1:10	Prehistoric Sites	+		No	No	No	SST
Control Humidity Warehouse	2002		6	0-1	.1:10	Prehistoric Sites	+		No	No	No	SST
Equipment Management Maintenance Building	2003		.2	0-1	.1:10	Prehistoric Sites	+		No	No	No	SST
Proposed Projects in the Community and Training Area:												
Expansion of Extant Physical Fitness Gym	1985		.05	0-1	.1:10	Prehistoric Sites	+		No	No	No	SST
Outdoor Swimming Pool	1989		.3	1-15	1:10	Prehistoric Sites	+		No	No	No	SST
Recreation Building	1997		.3	0-1	.1:10	Prehistoric Sites	+		No	No	No	SST
Chapel	1998		.08	0-1	.1:10	Prehistoric Sites	+		No	No	No	SST
General Storage Family Housing	1999		.14	0-1	.1:10	Prehistoric Sites	+		No	No	No	SST

Notes: a. Refer to Figure 6-1 for location.
b. + = positive chance
c. SST = subsurface testing

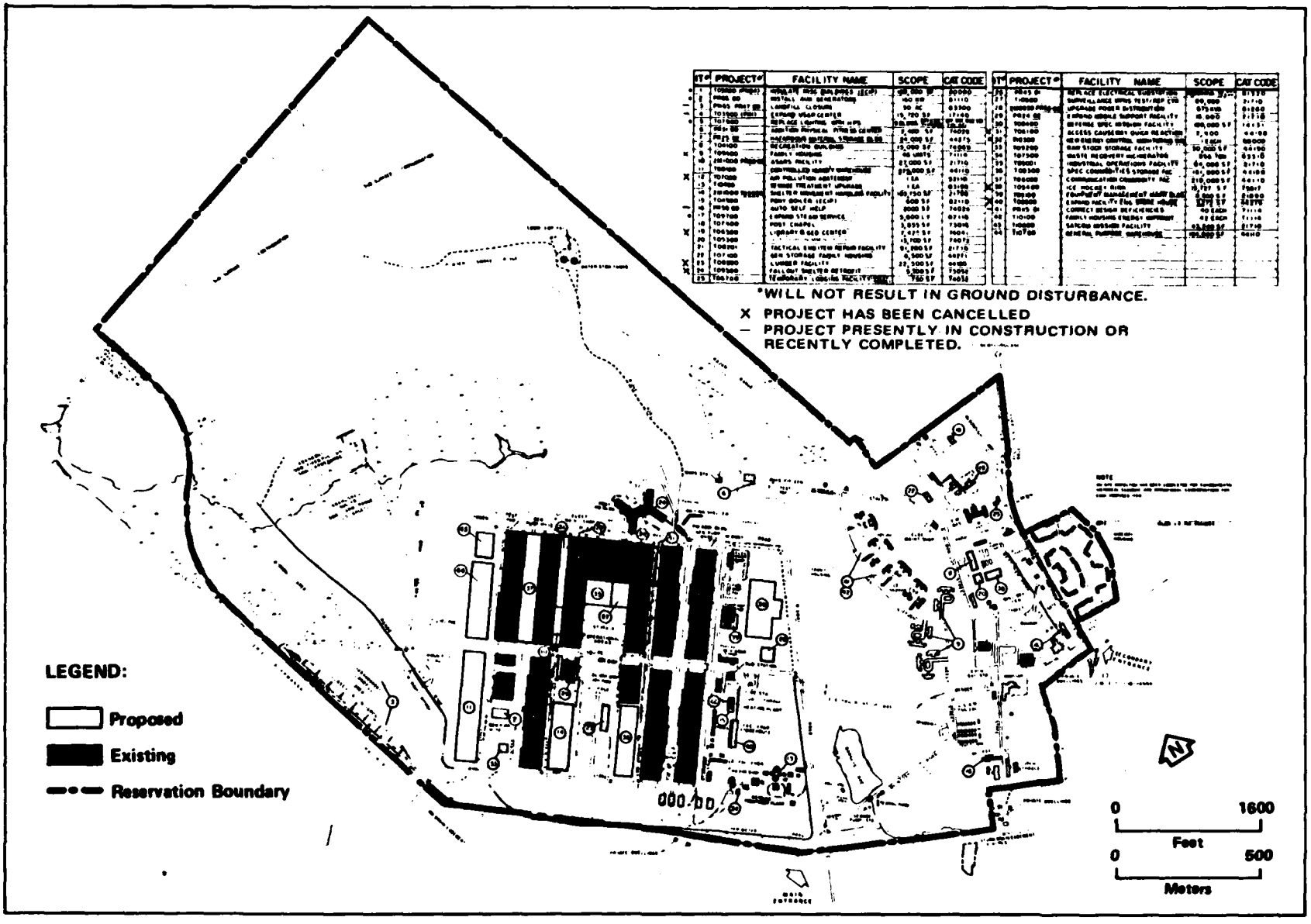

Figure 6-1. MAP OF AREAS OF ONGOING OR PLANNED ACTIVITIES AT THE TOBYHANNA ARMY DEPOT

d) Sewage Treatment Upgrade. This project is scheduled for FY87 (Figure 6-1, Number 13). This will involve the construction of an additional small structure southwest of Bldg. 242.

e) ASARS Facility/Tactical End Item Repair Facility. This facility, partially scheduled for FY84 and FY88, will connect two extant maintenance operations buildings (Bldg. 1C, bays 1-4 and Warehouse 4, bays 2 and 3) (Figure 6-1, Number 10).

f) SATCOM Facility. This building, scheduled for FY89, will be constructed northwest of Bldg. 5 (Figure 6-1, Number 43). This will be a slab construction on leveled fill.

g) Industrial Operations Facility. This 84,000 sq. ft. building will be built adjacent to Bldgs. 1A and C (Figure 6-1, Number 35). It is scheduled for FY89.

h) Defense Special Missions Facility. This is scheduled for FY90. This 180,000 sq. ft. structure will be built east of Bldg. 15 (Figure 6-1, Number 30).

i) Surveillance Weapons Test/Repair Center. This building scheduled for FY90, will be built adjacent to and west of Bldg. 1 (Figure 6-1, Number 27). It will replace temporary Bldg. 93.

j) Waste Recovery Incinerator. Scheduled for FY91, this 896 sq. ft. structure will be located southwest of Bldg. 23 (Figure 6-1, Number 34).

k) Communications Commodities Facility. This building will be constructed between Bldgs. 4 and 5 (Figure 6-1, Number 37). It is scheduled for FY93.

l) Total Systems Fielding Facility. This building will be constructed between Bldgs. 1B and 2. It is presently under design and is scheduled for FY94.

m) Raw Stock Storage Facility. This will be built approximately north of 5th Street and due west of Bldg. 13 (Figure 6-1, Number 33). This is scheduled for FY95.

n) Special Commodities Storage Facility. This is scheduled for FY96. It will be built north of Bldg. 7 and west of Bldg. 10 (Figure 6-1, Number 36).

o) General Purpose Warehouse. This structure, 194,000 sq. ft., will be located west of Bldg. 5 (Figure 6-1, Number 44). It is scheduled for FY2000.

p) Controlled Humidity Warehouse. Scheduled for FY2002, this 250,000 sq. ft. structure will be built west of Bldg. 5 (Figure 6-1, Number 11).

q) Equipment Management Maintenance Building. This project represents an expansion of Bldg. 15 (Figure 6-1, Number 39). It is scheduled for FY2003.

Proposed projects in the community and training area include:

r) Expansion of Extant Physical Fitness Gym. This project, scheduled for FY85, involves expansion to 2400 sq. ft. of Bldg. 5-34 (Figure 6-1, Number 6).

s) Outdoor Swimming Pool. Scheduled for FY89, this will be built east of McDonough Street, north of Bldg. 220 (Figure 6-1, Number 20). There will be an associated concrete walkway, landscaping and a parking lot. Design details are not yet available for this project (Abe Gonzalez, 1984, Personal Communication).

t) Recreation Building. This 15,000 sq. ft. building, scheduled for FY97, will be located east of McDonough Street, approximately south of the parade ground (Figure 6-1, Number 8).

u) Chapel. Scheduled for FY98, this structure will be located west of the McDonough Loop, west of Bldg. 1019 (Figure 6-1, Number 18). Semi-permanent Bldgs. 1017, 1018 and 1019 will be demolished.

v) General Storage Family Housing. This is scheduled for FY99 and will be located west of Bldg. 1006 (Figure 6-1, Number 22).

6.1.2 Ongoing Nonconstruction Activities

Outdoor Recreation. One area (Figure 3-1, GDA-5) is presently used for outdoor recreation at TOAD. This has been named the Passion Recreation Area. Associated activities include boating, picnicing and passive recreation.

This area has been exposed to minimal disturbance. It is therefore the most likely to contain prehistoric archeological remains. There are presently no plans to further develop the area.

Woodland Management. TOAD's woodland management program does not include a public sale of timber. The policy, which will be updated in the near future, is to basically allow the timberlands to grow naturally without interference (Abe Gonzalez, 1984, Personal Communication).

Management of Contaminated Land. The northernmost area of TOAD behind Powder Smoke Ridge is labeled "sub-surface contamination" (MPBIM 18-02-08). The area's source of contamination is unexploded ordnance. The hilly topography of the area indicates that this was probably not an attractive place for prehistoric sites of any substantial size and historic maps do not indicate any structures in this area. Limited archeological testing of the area, although desirable for the purpose of documenting land disturbance (section 3.2, GDA-2) and confirming the lack of archeological resources, is probably not feasible.

6.2 APPROPRIATE ARCHEOLOGICAL MANAGEMENT GOALS WITHIN THE TOBYHANNA ARMY DEPOT MASTER PLAN

6.2.1 General Facility Planning

While much of TOAD has been disturbed, there are two areas which remain relatively undisturbed and may contain prehistoric archeological remains. These are the wooded drainage area which includes Oakes Swamp, the radar range and intervening higher ground (section 3.2, GDA-10), and the Passion Recreation Area (section 3.2, GDA-5). During prehistoric times Oakes Swamp (in GDA-10) and Hummler Run (in GDA-5) may have been attractive areas to hunt migratory water fowl or perhaps other animals which exploited the water sources. A primary planning goal for TOAD, in accordance with the National Historic Preservation Act and AR 420-40, is to determine if either of these areas contains archeological resources requiring further management.

6.2.2 Project-Specific Resource Protection or Treatment Options

Presently, TOAD's planned future development projects will result in ground disturbance in areas which have been previously disturbed. It would be advisable to institute a limited subsurface archeological testing program to document the interpreted ground disturbance and lack of archeological potential both in TOAD's operational area, and the community and training areas.

All new TOAD employees should be advised during their initial orientation of DARCOM's historic preservation responsibilities. They should be advised to report any archeological finds on TOAD to the Facilities Engineer (who in turn should notify DARCOM and the State Historic Preservation Officer). The present "Standards of Conduct for TOAD Employees" should be revised to note that the removal or disturbance of archeological remains from TOAD property (including housing areas) is prohibited. Residents of housing areas should be advised to inform their families of this prohibition and the need to inform the Facilities Engineer of any chance finds of archeological remains.

6.2.3 A Summary of Recommended Management Directions and Priorities for Effective Compliance

The following prioritized archeological resource management tasks should be undertaken at TOAD:

- o archeological survey of the TOAD original construction area
- o archeological survey of the wooded drainage area near Oakes Swamp
- o archeological survey of the Passion Recreation Area
- o limited archeological survey of the operational area
- o clarification of management needs of conveyed property
- o advise employees of DARCOM's historic preservation responsibilities during new personnel orientations and by modification of the TOAD Code of Conduct.

Subsequent recommendations for the management of archeological resources at TOAD is contingent upon future discoveries of such resources.

6.3 ESTIMATED SCOPES OF WORK AND COST LEVELS FOR PRESENTLY IDENTIFIABLE MANAGEMENT NEEDS

The following scopes-of-work intentionally deviate from the Guidelines for Archaeological Survey and Mitigation issued by the Pennsylvania Historical and Museum Commission, (PHMC), due to the nature of the recommended projects (Pennsylvania Historical and Museum Commission 1984). These scopes-of-work have been reviewed and approved by PHMC (Stephanie Rodeffer, 1984, Personal Communication).

6.3.1 Archeological Survey of Tobyhanna Army Depot's Original Construction Area

Archeological testing should be conducted to document the estimated disturbance in GDA-1 and to determine if any remains of the original buildings associated with the Tobyhanna Military Reservation still exist in the archeological record. Testing for archeological resources should be accomplished through a series of sub-surface shovel tests, excavated with shovels in combination with soil augers. These tests should extend to sterile Pleistocene deposits and all excavated material should be screened through 1/4 in. hardware cloth. Tests should be placed in the vicinities of the former building locations in areas which currently are grassy or protected by parking facilities. These tests should be placed at approximately 200 ft. intervals. Field investigations should require three person days. Analysis and reporting will require an additional five person days. The estimated cost will be $4000-5000. Out-of-pocket expenses such as car rental, graphics, word processing, report reproduction, food and lodging will come to about $1700 of the total estimate.

6.3.2 Archeological Survey of the Wooded Drainage Area Near Oakes Swamp

Archeological testing would provide a mechanism to inventory the as yet unknown archeological cultural resources in the area. The area has been minimally disturbed except in discrete areas such as the small arms range (GDA-4), and where Ridge Road and Range Road transect GDA-10. Testing for archeological resources should be accomplished through a series of sub-surface shovel tests, excavated with shovels in combination with soil augers placed at approximately 60 m. intervals. These tests should extend to sterile Pleistocene deposits. All excavated material should be screened through 1/4 in. hardware cloth. Tests should be confined to relatively level areas surrounding wetlands and below the 1975 ft. contour. This will cover approximately 52 a. Field investigations should require seven person days. Analysis and reporting will require an additional 11 person days. The estimated cost will be $9,700 - 10,700 including about $3500 in out-of-pocket expenses.

6.3.3 Archeological Survey of the Passion Recreation Area

Limited archeological testing in this area would provide a mechanism to inventory GDA-5 for as yet unknown archeological cultural resources. With the exception of a baseball diamond, McIntosh Road, a few small

structures, and the damming of Hummler Run to form Barney's Lake, this area is relatively undisturbed. Survey of this approximately 94 a. (this excludes disturbed acreage such as Barney's Lake) will require approximately 11 person days. Analysis and report preparation will require an additional 14 person days. Subsurface tests spaced at 200 ft. intervals should be excavated to sterile Pleistocene deposits. All excavated materials should be screened through 1/4 in. hardware cloth. The estimated cost will be $10,500 - $11,500 including about $3,500 in out-of-pocket expenses.

6.3.4 Archeological Survey of the Operational Area

As noted in section 3.2, TOAD's operational area, GDA-6, has been drastically altered from its original topographical layout. Subsurface testing should be conducted along the southern periphery of the operational area, where some areas may still represent the original topography and land surface. Such testing would require two person days in the field using the same methods described in sections 6.3.1, 6.3.2, and 6.3.3. An additional three person days would be required for laboratory analysis and report preparation. The estimated cost will be $3,000 - 4,000 including about $1,650 in out-of-pocket expenses.

6.3.5 Clarification of Management Needs for Conveyed Property

TOAD is bounded to the north and west by lands used by the Pennsylvania Department of Forest and Waters for Tobyhanna and Gouldsboro State Parks. Two adjacent areas were conveyed to others by the installation in 1974 by quitclaim deeds. The first deed, dated 1 July 1974, conveyed 75.05 a. of land located in the northeast corner of the reservation to the Township of Coolbaugh, County of Monroe, Commonwealth of Pennsylvania for public park and recreation purposes. The second deed, dated 7 August 1974, conveyed 52 a. of land, located on the west side of the reservation, to East Stroudsburg State College, East Stroudsburg Pennsylvania for educational purposes (TOAD 1982a.)

In the event of a national emergency TOAD maintains the right reclaim these properties (Abe Gonzalez, 1984, Personal Communication). While TOAD no longer owns these lands, it maintains a degree of control. A determination should be made as to whether or not TOAD is responsible for including these properties in its archeological management plan. A positive decision will necessitate both a detailed study of prior ground disturbance in these areas and a determination of the degree of survey necessary for inventory of archeological resources.

7.0
SUMMARY

All major information sources likely to have data relating to the archeology of the site occupied by the Tobyhanna Army Depot were reviewed for this study. The review indicated that no prehistoric archeological sites have been reported for TOAD and only a few in its immediate vicinity. It is possible that prehistoric resources, often assoicated with seasonal streams and marshes, exist within two relatively undisturbed areas of TOAD (GDA-10 and GDA-5). In addition, remnants of the original Tobyhanna Military Reservation may survive in GDA-1. These would probably take the form of foundation remnants or middens. The physical integrity of these sites is unknown.

Among the institutions consulted as part of the basic data gathering for this overview were: the Tobyhanna Army Depot; the Pattee Library at Pennsylvania State University; the Pennsylvania Historical and Museum Commission Bureau of Historic Preservation, Division of Archeology; the American Museum of Natural History; the Museum of the American Indian - Heye Foundation; the New York Public Library (Map Division); and the Navy and Old Army, Still Photo and Modern Military History branches of the National Archives. In addition the "America: History and Life" data base of Lockheed's Dialog Information Retrieval Services which contains abstracts from more than 2000 history journals was also consulted.

One visit to TOAD was made by the authors. In addition to a windshield tour of the facility, construction plans and drawings maintained by the Facilities Engineering Division were examined.

Limited subsurface testing has been suggested in TOAD's operational area and its community and training areas where future development projects are planned. Such tests should substantiate interpretations of extensive prior ground disturbance.

Subsurface testing has also been suggested in the vicinities of Oakes Swamp and the Passion Recreation Area. These areas seem to have been relatively undisturbed and may yield as yet unrecorded archeological resources.

The terms of TOAD's management responsibilities over lands conveyed to both the Commonwealth of Pennsylvania and East Stroudsburg State College should be clarified. Appropriate incorporation into this management plan should then be made.

This plan also suggests that TOAD advise employees of DARCOM's historic preservation responsibilities. Subsequent recommendations for the management of archeological resources at TOAD are contingent upon future discoveries of archeological resources.

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APPENDIX A

This appendix contains information on the location of potential archeological sites on the Tobyhanna Army Depot (Table A-1; Figure A-1). This information should be considered confidential and not for general public release.

Table A-1. LOCATIONAL DATA, KNOWN AND POTENTIAL ARCHEOLOGICAL RESOURCES ON THE TOBYHANNA ARMY DEPOT

Site Number[a]	UTM[b]			Legal Reference			USGS Quad Map[c]	CR[d]
	Northing	Easting	Ref.	Township	Range	Section		
Potential Resources:								
TOAD-1	4556069	458658	ECO	Tobyhanna			T773	3
TOAD-2	4554378	465335	ECO	Tobyhanna			T773	3
TOAD-3	4554442	465206	ECO	Tobyhanna			T773	3
TOAD-4	4554442	465078	ECO	Tobyhanna			T773	3
TOAD-5	4554506	464800	ECO	Tobyhanna			T773	3
TOAD-6	4554592	464650	ECO	Tobyhanna			T773	3
TOAD-7	4554613	464521	ECO	Tobyhanna			T773	3
TOAD-8	4553929	465249	ECO	Tobyhanna			T773	3
TOAD-9	4553950	465078	ECO	Tobyhanna			T773	3
TOAD-10	4553993	464971	ECO	Tobyhanna			T773	3
TOAD-11	4553993	464864	ECO	Tobyhanna			T773	3
TOAD-12	4554036	464735	ECO	Tobyhanna			T773	3
TOAD-13	4554036	464586	ECO	Tobyhanna			T773	3
TOAD-14	4553479	463965	ECO	Tobyhanna			T773	3
TOAD-15	4553479	464115	ECO	Tobyhanna			T773	3
TOAD-16	4553094	463794	ECO	Tobyhanna			T773	3
TOAD-17	4552987	463965	ECO	Tobyhanna			T773	3
TOAD-18	4553715	463665	ECO	Tobyhanna			T773	3
TOAD-19	4553501	463537	ECO	Tobyhanna			T773	3
TOAD-20	4553265	463387	ECO	Tobyhanna			T773	3
TOAD-21	4553008	463259	ECO	Tobyhanna			T773	3
TOAD-22	4555876	463965	ECO	Tobyhanna			T773	3
TOAD-23	4555277	463665	ECO	Tobyhanna			T773	3
TOAD-24	4554785	463494	ECO	Tobyhanna			T773	3
TOAD-25	4554121	463195	ECO	Tobyhanna			T773	3
TOAD-26	4553779	463023	ECO	Tobyhanna			T773	3
TOAD-27	4553672	462510	ECO	Tobyhanna			T773	3
TOAD-28	4553436	462809	ECO	Tobyhanna			T773	3
TOAD-29	4553265	462574	ECO	Tobyhanna			T773	3
TOAD-30	4553051	462510	ECO	Tobyhanna			T773	3
TOAD-31	4552987	462360	ECO	Tobyhanna			T773	3
TOAD-32	4552730	462232	ECO	Tobyhanna			T773	3
TOAD-33	4552740	462430	ECO	Tobyhanna			T773	3

Notes:

a. Designation assigned for this study.
b. UTM Zone, ECO = Envirosphere Company.
c. T773 = Tobyhanna 7.5 minute Quadrangle Map, 1973 edition.
d. The Confidence Rating (CR) is an evaluation of the perceived reliability of the site locational data: 1) the information is more guess than science, (2) the judgment is moderately reliable, or (3) the information is most likely reliable. All UTM measurements are believed to be accurate to within 10 m. All UTM measurements were made in relationship to the northwest corner of the TOAD facility which was assigned the coordinates N456100, E4629200.

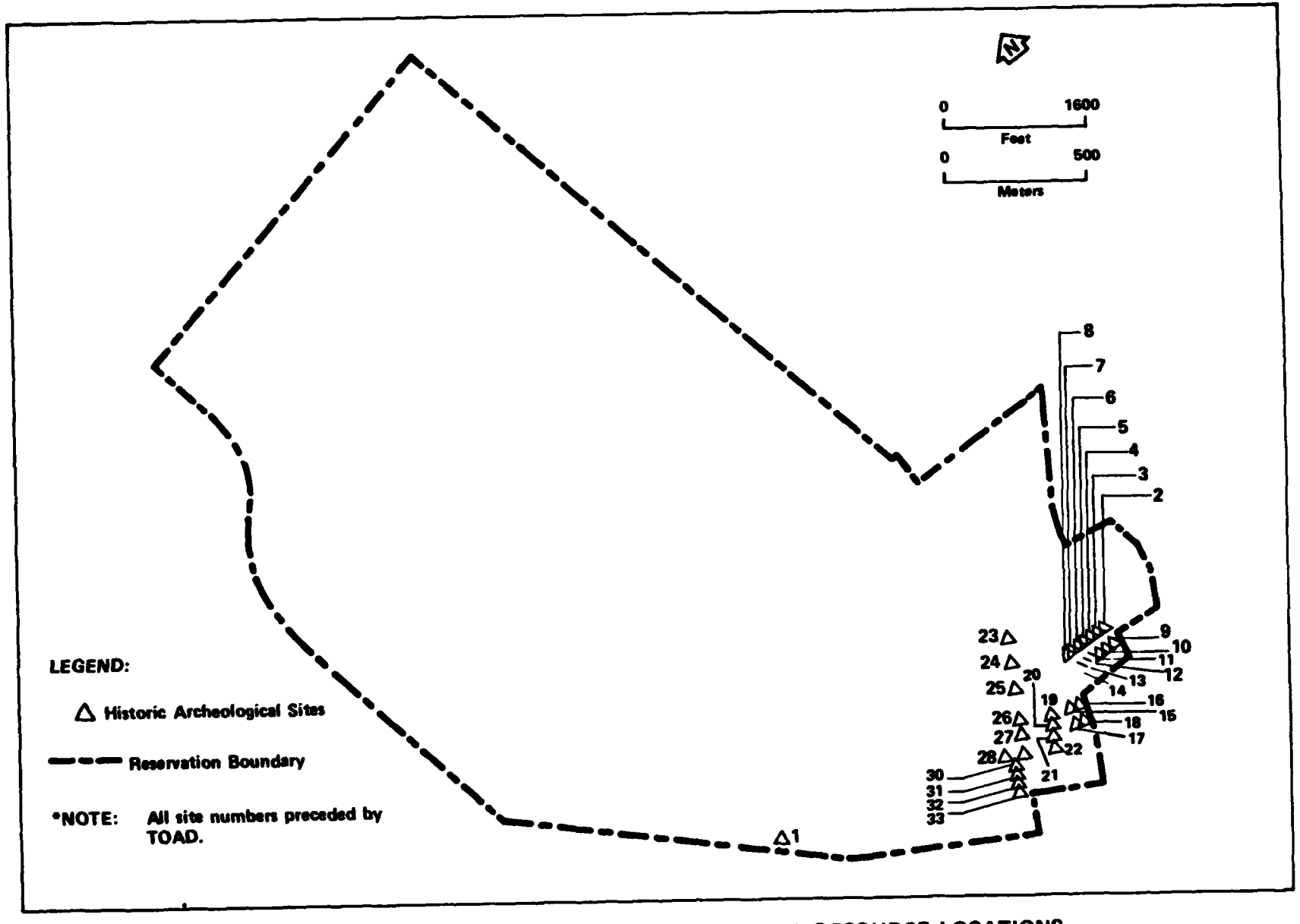

Figure A-1. A MAP OF POTENTIAL ARCHEOLOGICAL RESOURCE LOCATIONS ON THE TOBYHANNA ARMY DEPOT

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